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MARYLAND MEDICAL JOURNAL

A Journal of Medicine and Surgery

VOLUME XLVII

DECEMBER 31, 1903—DECEMBER 31, 1904

BALTIMORE:
MARYLAND MEDICAL JOURNAL
FIDELITY BUILDING
1904

coll. 80
1/14 '20

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MARYLAND
MEDICAL JOURNAL
A Journal of Medicine and Surgery.

Vol. XLVII—No. 1 BALTIMORE, JANUARY, 1904 Whole No. 1028

A YEAR'S WORK IN APPENDICITIS.

By Randolph Winslow, M.D.,
Professor of Surgery, University of Maryland, Baltimore.

During the twelve months from June, 1902, to June, 1903, I operated on forty-six cases of appendicitis, or on conditions due, or supposed to be due, to disease of the appendix. Whilst this number of cases is not very large, it may furnish some points for useful and interesting consideration.

Of these cases, forty-four recovered and two died. Twenty-six were males and twenty females. The youngest was a three-year-old boy and the oldest a 63-year-old woman, both making good recoveries. A coincidence in the case of the 63-year-old woman is that I operated on her husband for the same trouble when he was sixty-nine years of age, and after the lapse of nine years he still enjoys good health and is an exceptionally active business man.

Besides the three-year-old boy, a number of patients of tender years came under treatment—one aged six, one aged seven, two nine years old, two ten years old, two eleven years, and two thirteen years of age. The second oldest patient was fifty-one years of age, and there were four between forty and fifty years of age. These statistics agree with the well-known facts that the extremes of life, while not exempt from appendicitis, are comparatively rarely affected.

Twenty-eight patients were seen during the first attack and were operated on as follows:

On the second day three, one of which was clean, that is, there was no suppuration present, and two were purulent.

On the third day three, in all of which an abscess had formed.
On the fourth day three, one clean, two purulent,
On the fifth day three, one clean, two purulent.
On the sixth day one, clean.
On the seventh day one, purulent.
On the eighth day one, purulent.
On the tenth day one, clean.
On the eleventh day one, clean.

On the thirteenth day one, clean.
On the fourteenth day three, one clean, two purulent.
On the twenty-first day two, purulent.
Of short duration two, clean.
Of six weeks' duration one, purulent.
Of unknown duration two, one clean, one purulent.

It will be noticed from the above that eleven, or 39¼ per cent., were clean, and seventeen, or 60¾ per cent., purulent, and we are thereby admonished not to delay operation, as pus may be found in the peritoneal cavity at a very early period.

Five patients were operated on during the second attack—one on the second day, one on the fifth day, one each in three weeks, six weeks, and two months, respectively. Contrary to what might have been expected, all these were clean cases.

Three cases are recorded as having been operated on during the third attack, of which two were clean and one purulent.

Four cases are stated to have had numerous attacks, of which three were clean, and in one pus was present.

The number of attacks in the remaining cases is unknown, but from the fact that most of them were purulent it is probable that they were acute cases. The number of recurrent cases is too small to be of much use from a statistical standpoint, yet they seem to indicate that if a patient survives the first attack there is a probability that the inflammation will become chronic and the appendix undergo thickening rather than rupture, with absecess formation or peritonitis.

The symptoms of appendicitis are generally quite distinct. The sudden onset of pain, usually with vomiting; the localization of the pain after a short time in the right iliac region, muscular rigidity and tenderness over the diseased organ, and later frequently a lump, are sufficient to call attention to the nature of the disease. These classical signs, however, do not always follow in regular sequence, and at times one is not only in doubt as to the diagnosis, but is shown to be in error at the operation. I must acknowledge that my experience is not exceptional in this regard, and I have opened the abdomen for supposed appendicitis and have found the appendix quite healthy-looking, but usually there has been disease of other structures, as the right tube or ovary, the gall-bladder or intestines. Even when an error in diagnosis has been made one can comfort himself with the thought that the operation has not been done in vain if he removes the useless organ and thereby prevents a possible attack in the future. I want especially to call attention to the fact that the appendix may occupy some anomalous position, as towards the left, or in the pelvic cavity, or upwards towards the liver, which may cause such variations in the symptoms as to obscure the diagnosis. When the symptoms are urgent and the diagnosis in doubt an operation is indicated. Amongst the cases included in this paper are two of intestinal obstruction, in one of which a long appendix had caused a kink in the gut by means of a localized peritonitis. The removal of the appendix and straightening out of the constricted bowel was followed by a recovery in each case.

Pus, when present, is usually restrained by adhesions, and thereby prevented from contaminating the general peritoneal cavity, but it not infrequently happens that the appendix ruptures into the free peritoneal cavity, and nothing but prompt and efficient operation can save the patient's life. Several such conditions are included in the cases mentioned in this report. The two deaths occurring in this series of cases were from pre-existing general suppurative peritonitis in boys of eleven and sixteen years of age, respectively. In the latter case, whilst there was disease of the appendix, the fatal termination was superinduced by a gangrenous Meckel's diverticulum. Sometimes previous to the rupture of the appendix into the unprotected peritoneal cavity a serous peritonitis is set up which can usually be readily controlled by appropriate treatment, but which is likely to become purulent if an operation is not speedily performed. In an operation done on the day of this writing a 15-year-old girl was taken with severe pain, vomiting, tenderness and some rigidity, and was opened thirty-four hours later. A large red, gangrenous, but unruptured, appendix was found, with a considerable peritonitis and a collection of sero-purulent exudate.

Amongst the distressing and troublesome complications of appendicitis is that of fecal fistula, and four such cases are included in the present series. This trouble is usually due to sloughing of the cecum or some portion of intestine, and generally heals spontaneously, though it may be necessary to resort to suture methods for its closure.

There is a widespread idea that appendicitis is due to foreign bodies in the appendix, and this belief has some justification. In almost every diseased appendix a lump of fecal matter or exudate will be found, shaped like and resembling a seed or stone. In some cases an actual concretion is found or a foreign body, such as a pin, bone or seed. In one of the cases reported the appendix was filled with sago-like bodies resembling the spawn of frogs and which seemed to be particles of pus rolled into little balls. I had never seen this condition previously and did not know what it was.

When the diagnosis is clear I usually employ the oblique incision of McBurney, with blunt separation of the abdominal muscles, by means of which the danger of hernia is minimized. Even when there is an abscess this method may be satisfactorily employed. If the diagnosis is in doubt, I make a straight incision over the right rectus muscle, separate the fibres of this muscle, and enter the peritoneal cavity in such a manner as to be able to explore the gall-bladder, appendix, and, if necessary, the pelvic organs.

It is very important that the appendix should be removed, and as one gains experience in the operation he becomes more able to find and remove it safely, but even in expert hands a few cases will come under observation in which it may be unwise or impossible to remove the organ, and where drainage must be relied on to secure a successful issue. The question of drainage is a somewhat doubtful one at present. Some surgeons, after carefully cleansing the abscess or the peritoneal cavity with hydrogen dioxide and irrigation, sew the wound up without drainage. I have not had the courage to do this, and in all doubtful cases employ gauze drainage freely. It is greatly to be desired that the abdominal incision should be closed, as it not only allows a more rapid healing, but is not often followed by hernia, whilst an open wound often becomes the seat of hernia at some time in the future.

ARE TENOTOMIES FOR HYPERPHORIA NECESSARILY MORE UNCERTAIN IN THEIR RESULTS THAN THOSE FOR ESOPHORIA AND EXOPHORIA?

By Samuel Theobald, M.D.,

Clinical Professor of Ophthalmology and Otology, Johns Hopkins University; Ophthalmic and Aural Surgeon to the Johns Hopkins Hospital.

A PAPER READ BEFORE THE AMERICAN OPHTHALMOLOGICAL SOCIETY AT THE RECENT MEETING IN WASHINGTON OF THE CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

THE question mark after the title of my paper is not without significance. It is intended to indicate that I am in search of information upon the subject to which it relates.

I may state at the outset that I have had no experience with so-called "graduated" tenotomies—that is to say, with tenotomies that are pretenses, and not actual tenotomies; in the next place, that before making a tenotomy I consider it essential in every case that a careful determination of the refraction should be made; and, further, that I never perform a tenotomy unless there exists a decided muscular fault.

My tenotomies for esophoria and exophoria have been, as a rule, very satisfactory, and those performed upon the vertical muscles have been measurably so. Nevertheless, my experience has been such that when I operate for hyperphoria I do not feel that measure of assurance as to the outcome of the procedure which I should like to feel.

One reason, it would seem, why tenotomies upon the lateral muscles are more satisfactory in their results than those upon the vertical muscles is that we can obtain greater aid from the use of glasses; another is that the lateral muscles are more fully under the control of the will; so that, if we have a moderate overcorrection or under-correction, the eyes come to our assistance and help us greatly. On the other hand, in operations upon the vertical muscles the eyes afford us much less help, and about all that we can do with glasses, apart from the assistance gained from prisms, is to correct any considerable amount of anisometropia that may be present.

One trouble that we meet with in tenotomies for hyperphoria is that a slight overcorrection, amounting, perhaps, to less than a third of the original defect, seems at times to cause the patient more annoyance than the much greater defect for which we have operated.

Another difficulty which besets us is that when we operate upon the inferior rectus we may secure just the balance we want for distant vision, but find things are not right in near vision. On the other hand, when we divide the superior rectus the result may be all that could be desired in near vision; but when the eyes, in distant vision, come to a higher plane, there is trouble.

Still another difficulty is that the effect of a definite amount of muscle-cutting varies so greatly in different cases—varies, indeed, from not more than 4° or 5° in some instances to as much as 15° or 20° in others.

A few cases may be cited in illustration of these points:

A guarded tenotomy of the left inferior rectus was made in the case of Miss X., who exhibited a right hyperphoria varying from 4½° to 5°. A left hyperphoria of less than 1½° results, but this slight overcorrection causes more discomfort than the original defect.

The right superior rectus was divided for 13° of right hyperphoria in the case of Mr. W. A residual right hyperphoria of 7° to 8° is left, but he is afforded complete relief.

In each of these cases a complete but guarded tenotomy of one muscle made a change of about 6° in the vertical balance of the eyes. In the case of Mrs. Z., on the other hand, a tenotomy of similar character upon the left inferior rectus converted an original right hyperphoria, varying in amount from 8° to 13°, into a left hyperphoria of 8°—that is to say, made a change of from 16° to 23°. Similarly, in two cases of hyperphoria of high grade recently operated upon the division of a single muscle—the superior rectus in one case, the inferior in the other—gave a correction in each of about 23°, which, fortunately, was not more than was required.

I should state that all my tenotomies upon the vertical muscles have been what may be termed "guarded"—that is, the tendon is divided completely, but the incision is not extended into Tenon's capsule, as in cases of squint and of marked exophoria and esophoria.

In conclusion, I may mention two points upon which especially I should be glad to have light shed: Is it possible to gauge, in advance, with any considerable degree of accuracy the effect of a tenotomy performed for the correction of hyperphoria? In operating for hyperphoria, is it, as a rule, better to divide the inferior or the superior rectus muscle?

Current Literature.

REVIEW IN MEDICINE.

Under the Supervision of Thomas R. Brown, M.D., Baltimore.

DECAPSULATION OF THE KIDNEY FOR CHRONIC BRIGHT'S DISEASE.

The subject of the surgical treatment of nephritis is one so full of interest to both physicians and surgeons that Tyson's recent article in the *New York Medical Journal* (October 10, 1903), in which he carefully reviews the subject, is especially welcome. Although the operation is generally ascribed to Edebohls, there is no doubt about it that Reginald Harrison, in 1895, performed this operation for the same condition. In the following year he published an account of his cases, the first of them a case of scarlatinal nephritis, in which, on splitting the capsule of the kidney, he found, instead of the suppurating kidney that he expected, an acutely-inflamed kidney of scarlatinal origin. He closed the wound, thinking that he had made a mistake in diagnosis, but was surprised to find that the excretion of urine increased markedly and the albumen gradually and completely disappeared. The second case was believed by him to be one of renal calculus, but on operating he found no stone was present, but that he was dealing with a case of nephritis, probably due to exposure to cold. The hematuria, albuminuria, and pain disappeared shortly after the operation. His third case was also operated upon on the belief that it was a case of calculus, but the condition proved to be a subacute nephritis, which was also completely relieved of all its symptoms by the exploratory incision of the kidney. In all these cases he felt that the successful results were due to the operative relief of the increased tension. It should be reserved, he says in conclusion, for cases where there is evidence that the recuperative power of the kidney suffering from nephritis is overweighed. The operation advised by him was not decapsulation, but simply splitting the capsule of the kidney.

Edebohls' first paper was published in the spring of 1899, and was entitled "Chronic Nephritis Affecting a Movable Kidney as an Indication for Nephropexy."

The permanent and complete disappearance of albumen and casts from the urine, and the restoration of the patients to perfect health in the case of three of the first five persons operated upon, led him to advise the operation of decapsulation for chronic nephritis. At first he believed that the cure in these cases was due to correction of the position of the kidney, but further observations gradually led him to the conviction that decapsulation was mainly responsible for the good results obtained. In March, 1903, he published the results in fifty-one cases of chronic Bright's disease, all of which he had treated by decapsulation. Of the fifty-one patients, twenty-nine were women, twenty-two men; all, with one exception, were adults; the average age was thirty-four; the oldest patient was sixty-seven. Of the fifty-one, twenty-nine had chronic interstitial nephritis, fourteen chronic diffuse nephritis, and eight chronic parenchymatous nephritis. In all cases except nine of those of interstitial nephritis the disease was bilateral. Of the fifty-one cases, fourteen died from twelve hours to eight years after the operation, two of accident, one of acute pyelo-nephritis, five of uremia, one of pneumonia, three of acute dilatation of the heart, and one of combined uremia and cerebral hemiplegia. Of the fourteen deaths, seven occurred from two months to eight years after the operation; the remaining seven from twelve hours to fifteen days. Of the nine remaining cases, ten recovered completely: twenty-nine were more or less benefited. According to Tyson, the real figures speak even more favorably for operation, as some of the cases had not passed the probationary period at the time of Edebohls' paper, while some cases were practically hopeless at the time of operation.

Tyson reports an interesting case of recurrent attacks of acute nephritis in a patient nine years of age who when four years old had had an attack of scarlet fever. When first seen by Tyson she was suffering from her fifth relapse, and she presented the typical picture of an acute exacerbation of a chronic nephritis (ascites, general anasarca, albuminuria, and casts in the urine). The usual medicinal and hygienic remedies were ordered, but as no medical treatment seemed to bring about any improvement, operative treatment was considered as a last resource. First the right kidney was decapsulated, and this was followed by a rapid disappearance of the ascites and anasarca, and a marked increase in the quantity of urine excreted. The operation on the other kidney was performed two months later, and since that time the patient has remained free from dropsy and secretes a normal amount of urine, although albumen and casts are still present.

As we have said before, Harrison thought that the good results of the operation were due to the relief of the tension, while Edebohls ascribes the good results to the decapsulation by the creation of a new and more active blood supply to the diseased kidney, as according to him the removal of the diseased capsule is followed by the extensive formation of new vascular connections between the kidney and fatty capsule, and this results in the removal of the inflammatory product by absorption and a new formation of epithelial cells. These views of Edebohls, however, are controverted by Harold Johnson, whose studies on dogs, published in the April number of the *Annals of Surgery*, shows that after decapsulation a new capsule is formed.

According to Tyson, the chief obstacle to repair is anemia, due to a compression of the vessels by the exudate in chronic parenchymatous nephritis and by the interstitial fibroid overgrowth in interstitial nephritis, and decapsulation removes a powerful resisting influence to the movement of the blood, which again moving freely through the organ renders possible the free secretion of urine and the power of repair.

In the acute cases, although but few of them have come to operation, Tyson believes with Harrison that it is the removal of tension and relief from intracapsular pressure that favors the restoration of function and nutrition.

Tyson is satisfied that the operation is a serviceable one, and that many lives may be saved and prolonged, and even cures obtained, by its judicious application, although it is obviously taken for granted that the operation should not be performed until the usual medical measures of treatment have been thoroughly applied. On the other hand, the operation should not be deferred until the patient is moribund. He considers cases of parenchymatous nephritis more favorable for operation than cases of interstitial nephritis, while, obviously, less satisfactory results are to be expected where there are extensive cardio-vascular changes.

* * *

THE SURGICAL TREATMENT OF EPILEPSY AND CONGENITAL MENTAL DEFECT.

Spratling, medical superintendent of the Craig Colony for Epileptics, discusses brain surgery in epilepsy and congenital mental defect (*New York and Philadelphia Medical Journal,* September 19, 26, 1903). He first discusses epilepsy, and lays down this general rule: The epilepsies that most seriously impair the conscious operations of the mind are less amenable to treatment by the surgeon than the epilepsies that leave the mind most largely unaffected. Thus the epilepsies that mostly affect the motor side of the body promise most for surgical treatment. Of the 1325 cases that have come under Spratling's observations during the past eight years, of which 774 were *grand mal* and nine Jacksonian, he gives in detail the results of operative treatment in thirty-three cases, all of which had been under his daily observation from one to eight years. Five of these operations were performed at the colony in cases selected with great care and the remaining twenty-eight cases were operated on prior to their admission. Twenty of the thirty-three cases were due to trauma of the head. The average duration of the epilepsy before the operation was approximately five and one-half years. The results noted from eleven months to several years after the operation were as follows: In twenty-one no improvement in the disease, either temporary or permanent; in eight the attacks were lessened in frequency and severity, the operation being a part of the treatment only; in three the disease was much worse after the operation. Twenty-eight of the thirty-three cases were male, and of these twenty-eight, twelve had good family histories. Of the five women, two had good family histories. No deaths resulted from the operation.

Spratling's views coincide with those of Roswell Park that "operation, when indicated and undertaken, should be regarded as a first measure, to be followed, and often preceded, by others looking to a correction of all faults of diet, elimination, etc. Long-continued attention to these matters is the price of success." Spratling insists that in many of the non-traumatic cases, presenting distinct localizing phenomena, operation will prove useless from the fact that while diffuse cortical conditions, productive of epilepsy, may have a central point of greatest initial discharge, it is too diffuse by far for the knife to remove.

Statistics on the subject are very unsatisfactory, because so many cases are reported far too soon after the operation to show us the ultimate result of surgical interference. According to Spratling, from two to three years at least should have elapsed before we judge of the success or failure of the operation, and if we accept this limit the ratio of recovery from epilepsy under brain surgery will be disappointingly small.

In idiocy and imbecility the result of surgical procedures is even more disappointing. Craniotomy was introduced by Lannelongue, who published twenty-five cases in 1891 in which he claimed that marked improvement followed the operation, but as Jacobi has insisted, and as Spratling reiterates, it is impossible to conceive the rational basis of operation for idiocy when we consider the main pathological lesions met with in this condition. These lesions, according to Jacobi, are chronic encephalitis, diffuse or circumscribed; diffuse (syphilitic) disease of the blood-vessels; arrest of vascular development in the cortex; inequality in the hemispheres; inequality in the peripheral cortical layer on the two sides; defect of the third frontal convolution and the island of Reil; meningoencephalitis, with thickening and adherence of the pia and brain, such as may occur after forceps or trauma; cephalhematoma internum; spontaneous hemorrhages; embolism from heart disease; thrombosis from cholera infantum, followed by destruction of cerebral cells and atrophy of the cortex.

Spratling gives the results of operation in 194 cases that he has collected, the first group including the more immediate results in 111 cases, the second results somewhat more permanent in eighty-three cases. Of the first series, all of whom were children, nineteen died in consequence of the operation; twenty-five showed no results; ten slight results, but not satisfactory; twenty-four were improved, without reports as to their character, while in the second series twenty died, fifty-four were unimproved, and nine only were improved, this improvement showing mostly in the patients being quieter.

Spratling next gives the results in Park's cases, Dana's cases, and Jacobi's cases, in all of which the mortality was extremely high and the favorable results very meager. So unsatisfactory have been the results of operations that Norbury, Bourneville, and others feel that there is but little hope to be derived from the surgical treatment of idiocy and feeble-mindedness, and it is on education and hygiene that we must depend.

Spratling, as a result of the study of his own cases and those from the literature, concludes that "it is not difficult to formulate conclusions on the results to be expected from surgery of the brain done for the possible relief of epilepsy and congenital mental defect.

"If the epilepsy is general and of some years' duration, we need hardly expect a cure, though in selected cases operations may ameliorate the symptoms to a marked extent, temporary amelioration being oftener obtained than that which is permanent.

"If the epilepsy is unessential, reflex, rudimentary in type, or of short duration, and the operation removes the cause early enough, we may expect the convulsions to cease in many cases, provided the patient is free from the vices of heredity that are always beyond the reach of the knife.

"We fail to find a single case of congenital mental defect in which a normal mental status was established through surgical intervention. We find many reports of cases benefited—the degree not being stated—so that it is extremely difficult to judge of specific results in any case.

"The fact that such operations are so few now as compared to what they were ten years ago is the strongest argument against its utility in the great majority of cases. It may still be used in isolated cases of idiocy, but it seems clear that it is slowly finding its position in rational treatment along a plane far lower than seemed possible at the time of its inauguration."

* * *

IS NEPHROPTOSIS HEREDITARY?

Sheldon (*Philadelphia Medical Journal*, February 28, 1903) believes that floating kidney is hereditary. Harris (*Journal of the American Medical Association*, June 1, 1901) concludes his important article as follows:

(1) The essential cause of movable kidney lies in a particular body-form.

(2) The chief characteristics of this body-form are a marked contraction of the lower end of the middle zone of the body, with a diminution of the capacity of this portion of the body cavity.

(3) This diminution of the capacity of the middle zone depresses the kidney so that the constricted outlet of the zone comes above the center of the organ, and all acts, such as coughing, straining, lifting, flexions of the body, etc., which tend to adduct the lower ribs, press on the upper pole of the kidney and crowd it still further downward.

(4) It is the long-continued repetition, in a suitable body-form of these influences, which collectively may be called internal traumata, that gradually produces a movable kidney.

(5) A distinctly movable kidney is never the immediate result of a single injury or external trauma.

Guillet (*Bulletin Médicale*, February 25, 1902) believes that it is rarely hereditary and that it is not a sign of degeneracy, while Albarran takes the opposite view, though both agree that many cases have been found in members of one family. The absence of the reports of the condition in children may be partially explained in two ways—first, overlooked, because not suspected as the cause of the symptoms; second, children congenitally predisposed and suffering from a moderate degree of the condition may not have lived long enough to have been subjected to a sufficient number of exciting causes to render the condition sufficiently prominent to be readily recognized. These assisting conditions are multiple pregnancies, lax abdominal walls, corset-wearing, and trauma. Sheldon does not believe that any of these in themselves would produce nephroptosis unless the necessary hereditary conditions were present. Watson (*Boston Medical and Surgical Journal*, CXIV, No. 12) has shown that the important structures in maintaining the kidney in a proper condition are behind and above the organ, while Keller (*Monath. f. Zeb. u. Cynaec.*, January, 1898) believes that the important factors in keeping the kidney in position are in front of the kidney attachments and intra-abdominal pressure. Gerota's conclusions are the same as Watson's. Einhorn (*Medical Record*, 1898, No. 13) believes that there is an individual predisposition in most cases, to which Drummond agrees. Cases of movable kidney in children have been reported by Hirschprung, Drummond, Gilford, Keppler, Steiner, Wilks, Howard, Albarran, Still, Fisher, and others. Fisher's case (*Univ. Med. Mag.*, X, No. 10) was an infant, eighteen months, post-mortem; Still (*British Medical Journal*, 1898, No. 1972), two infants—one post-mortem, one healthy baby. Sheldon reports five cases in one family—a woman, her sister, mother, aunt, and daughter—and four of these complained of abdominal symptoms; one, the daughter, age eighteen, no symptoms; all had descensus of the right kidney; one of the left also. He also reports a case in a girl of seven, right kidney, no symptoms, and a boy of eight, pain in the right side, nausea, headache, sickness of the stomach, attacks occurring once every two weeks, seeming to be precipitated by excitement or violent exercise; right kidney displaced downward and freely movable. Nephroplexy brought complete relief of symptoms.

REVIEW IN PATHOLOGY.

Under the Supervision of José L. Hirsh, M.D., Baltimore.

Report of the Committee on the Etiology of Yellow Fever. American Public Health Association. *Medical Record*, November 14, 1903.

Dr. John W. Ross read this report. Reference was made to contributions to the subject of yellow fever since the last annual meeting. A table was presented of cases treated at Las Animas Hospital, Havana, from October 20, 1902, to October 20, 1903, showing the number of cases of yellow fever and other diseases; also of the patients immune and non-immune to yellow fever. He said during the past summer there had been a sharp epidemic on the Mexican littoral. Havana was in constant communication with the infected ports. Ten regular passenger steamers plied to and fro each month with a considerable passenger traffic, not to mention the number of other vessels. The quarantine was rigid in preventing the entrance of persons who had been exposed to infection until the period of incubation had passed, and also against the entrance of mosquitoes from infected ports, but no precautions were taken against the entrance of baggage, bedding or household goods from those ports. Such things came in without let or hindrance, yet not a single case of yellow fever originated in Havana. Seven cases of yellow fever occurring among men from these vessels were treated in the hospital in Havana during the last yellow-fever season, with no precautions except to prevent the access of mosquitoes to the patients, still with no case of yellow fever contracted therefrom. Attention was called to the fact that this was but a repetition of the experience of the previous year. The chances of this also being an accident, considering the former history of Havana, seems scarcely worthy of consideration.

The committee stated that there were minor problems in the etiology of yellow fever yet to be investigated. These were:

1. As to the determination of the period of the disease in man during which yellow fever could be transmitted to the mosquito. So far shown that it was transmitted somewhat over two days, *i. e.*, in the first, second, and third days, but there were not sufficient experiments made to prove that the third day was the limit at which the mosquito could be infected. The importance of this determination was obvious.

2. The determination of the minimum period after feeding at which the mosquito could become infective. Reed had shown that this seemed to depend upon the temperature. A minimum period, in his experience, was twelve days in his first experimental case, and, judging from observation of yellow fever as it occurred in nature, this was probably near the limit. Still, sufficient proof had not been adduced that mosquitoes contaminated in less than twelve days had not conveyed yellow fever. Since the determination of this point experimentally would involve producing yellow fever in probably a considerable number of human beings, and since the minimum in Reed's experiments agreed closely with previous observations by Carter on yellow fever, the committee thought that further experiments for this purpose were not justifiable.

3. To determine if mosquitoes other than the stegomyia conveyed yellow fever, and if other species of stegomyia besides S. fasciata could do so. The first was from analogy very improbable; the latter, for the same reason, was probable.

4. To determine if S. fasciata was found breeding at a distance from human habitations, *i. e.*, if it was anywhere a true sylvan, campestral, or palustral mosquito.

5. A closer study of the hibernation of this insect was desirable in order to determine (a) what proportion of the infected animal survived the ordinary winter in the Gulf States; (b) whether such as survived retained their power of transmitting yellow fever.

6. To determine if S. fasciata was capable of acclimatization in environments unfavorable to the immigrant mosquitoes also deserved observation and further experimentation.

7. To determine the distance across water that this insect was aerially conveyed. If desired, it would be easy to differentiate the blood-fed (not necessarily infected mosquitoes) by observing if they deposited eggs.

8. Finally, it seemed advisable to determine directly by observation whether this mosquito was carried by railroad trains, and if so, in what number and the general conditions of such transfer. On this might depend measures of land quarantine.

JAUNDICE, WITH REPORTS OF INTERESTING ILLUSTRATIVE CASES: A CONTRIBUTION TO THE TOXIC FORM OF THIS CONDITION.

James M. Anders. *American Journal of the Medical Sciences,* April, 1903.

Anders shows from numerous clinical observations that the teaching of hematogenous jaundice is an error, since jaundice cannot arise without involvement of the liver. The cases of icterus accompanied by severe alterations of the blood he characterizes as toxic jaundice. In the course of numerous affections that are accompanied by profound anemia jaundice may be observed. The toxic form also arises from the action of certain poisons, as ether, chloroform, and the like. In many instances of toxic jaundice an excessive amount of bile pigment is secreted, with subsequent reabsorption of the redundant quantity from the intestines. While the striking feature may be found in the bile, and the amount of bile secreted may be in excess, there is probably in all such cases of jaundice temporary obstruction in the fine biliary canals as the result of increased viscosity of the bile or an intrahepatic cholangitis; hence reabsorption, not from the intestines, but from the liver, occurs. Anders reports a case due to ether narcosis. A young woman was operated on for double pyosalpinx. Three days after the operation slight fever, followed by jaundice, was noted. The liver was enlarged and sensitive; the urine and stools contained bile; the hemaglobin was diminished, and there was marked leucocytosis. In a week all symptoms disappeared. These symptoms were doubtless due to the destruction of blood-cells, so that increased hemaglobin was present in the blood serum and changed by the liver into bile pigments.

The influence of ether was also shown experimentally. After a narcosis of twenty minutes the hemaglobin of guinea-pigs showed a diminution, leucocytes were increased, and there was a marked poikilocytosis. After several days the conditions became normal. The destruction of the blood reached its height twenty-four hours after the narcosis; then regeneration began. A similar change was noted in the blood of man during narcosis. In neither of these cases did jaundice develop.

The author calls attention to several cases of icterus as complications of other diseases. One fatal case of pneumonia showed a marked cholangitis of the intrahepatic ducts, with desquamation of the biliary epithelium and the presence in the smaller ducts of bacteria resembling the colon bacilli. In this case the intrahepatic cholangitis was undoubtedly the causative factor. A second case followed secondary syphilis, probably due to perihepatitis. Of especial interest is the observation that increased bile elimination may be the causative factor of acute nephritis, due to great irritation of the kidney.

The author sums up the following conclusions and questions:

1. Is there a true polycholia, due to the conversion into bile pigments of hemaglobin, that is suddenly liberated by certain poisons,

as ether, chloroform, or the toxins of acute infections, as lobar pneumonia?

2. As there could be no jaundice without the presence of the liver, the term "hematogenous" is misleading and should be regarded as obsolete. The term *toxic jaundice* may be, however, appropriately applied to the cases of hepatogenous jaundice, in which the blood-changes are a more or less striking picture.
3. May not the jaundice rarely seen in secondary syphilis be toxic in nature—at times, at least—rather than purely hepatogenous?
4. Clear evidence to show that the hepatic cirrhoses are in many cases of microbic origin is accumulating.
5. Relapsing febrile jaundice is also to be classified as an infection, probably due to the colon group.
6. It is probable that the jaundice of hepatic cirrhosis is toxic in nature.

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GANGRENOUS APPENDICITIS, WITH GENERAL PERITONITIS, PERFORATION OF THE DIAPHRAGM AND LEFT LUNG. Josias. *La Pediatric Pratique,* May, 1903; *Arch. Pediatrics,* November, 1903.

The case refers to a girl fourteen years old, with a tubercular family history. The symptoms of cough, fever, vomiting, constipation, followed by diarrhea, had led to the diagnosis of tubercular peritonitis. The sputum showed pneumococci and streptococci. At the base of the left lung posteriorily dullness, distant respiration, and friction rubs were heard. The urine contained a small quantity of indican. The condition became immediately worse, with onset of frequent foul, yellowish stools and the appearance of subcrepitant rales at the left base. Vomiting of large quantities of foul, thick liquid supervened. Her death occurred two days later. At autopsy there was a general purulent peritonitis, with pus in large pockets in the right and left hypochondriac region. The appendix was gangrenous. There was a perihepititis. Evidences of pleurisy were seen and congestion of the left lower lobe. At the base of this lobe there was a small area of purulent broncho-pneumonia, with perforation of the lung. At the apex alone a few cheesy tubercles were discovered. The diaphragm showed a perforation in the region of the left vault. Thus the pus from the abdominal cavity had burrowed through the diaphragm into the lung, causing death of tissue and a purulent broncho-pneumonia. The tubercle bacillus was at no time found.

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GONORRHEA IN INFANTS, WITH A REPORT OF EIGHT CASES OF PYEMIA. R. B. Kimball. *Medical Record,* November 14, 1903.

There can be no doubt that there exists in infants a remarkable predisposition to gonorrheal infection, the explanation of which is still in doubt. In girls the susceptibility is in inverse proportion to the age, although boys are also quite susceptible. The author reports a series of infections which are of especial interest from the fact that in none of them was there any local catarrh either of the vagina or the conjunctiva. In all of his eight cases of pyemia there was no local infection which could be considered to form a starting-point for the disease.

All eight cases are described in more or less detail. All were in infants under the age of three months. Seven were males and one female—a rather strange fact considering the greater preponderance of gonorrheal infection in the female. In six of these cases there was a purulent polyarthritis, periarthritis, and myositis, the disease being apparently a general pyemia. In two cases only one joint, the knee, was involved. The ankles and wrists were the favorite seat of inflammation. In two cases the tempero-maxillary joints were involved. In one case which came to autopsy eleven joints were found to contain pus. In none of the cases were there any urethritis, vaginitis, or conjunctivitis, with the exception of one instance, which developed after the joint involvement. Microscopical examination of the pus obtained from the various joints affected in these eight cases showed in every case numerous diplococci, somewhat biscuit-shaped, having all the characteristics of gonococci.

Reviewing the possible portals of entry to the body, the skin and umbilicus in these cases can be excluded, as there was no lesion of surface epithelium or sign of cord infection in any case. The urethra and eyes were normal. The anus in one case, which was syphilitic, may have been the source of infection. A stomatitis, like thrush, was present in the mouth of three of the children. In one case intracellular diplococci, decolorizing by Gram, were found in the mouth scrapings, and suggests to the author such a mode of general infection. In this series of cases, all of which occurred in the same ward of the Babies' Hospital, it is possible that the contamination occurred from the nurse's hand in the routine cleansing of the mouths.

The author draws the following conclusions:

1. Gonorrhea prevails among infants to a large extent, and in institutions often assumes the proportions of an epidemic.
2. The ordinary clinical infections are ophthalmia, vulvo-vaginitis, and pyemia.
3. The series of cases of pyemia here reported occurred in infants in whom no local lesion could be found to explain the mode of entrance of the organism to the general circulation.
4. Such an infection may arise from a stomatitis due to the gonococcus.

In this connection it is interesting to note a report of two cases of general gonococcal peritonitis in young girls by Northrup (*Archives of Pediatrics,* December, 1903). One of these resembled appendicitis, and was operated upon. Both cases made a good recovery. He suggests that when a young girl presents abdominal symptoms having an explosive beginning, examine for vulvo-vaginal discharge. If gonococcus is identified, defer operation. Both of his cases were associated with vulvo-vaginal gonorrhea.

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION IN CLINICAL MEDICINE AND SURGERY.

MEETING HELD FRIDAY, NOVEMBER 6, 1903.

A Study of 337 Cases of Enteric Fever in Children—Dr. S. S. Adams of Washington, D. C.—The series of cases reported by Dr. Adams was from the Children's Hospital of Washington. The clinical features of enteric fever in children have been variously interpreted, the "typho-malarial" cases having been at one time excluded and at another included under this diagnosis. Dr. Adams' experience has led him to doubt the immunity of children to typhoid fever which is claimed by some authorities. The majority of his cases occurred in the late summer months, and they differed only in degree from the adult cases. Epistaxis occurred in 50 per cent. Of 210 cases, thirty-one had hemorrhage, and eighteen died. Mental changes were often present, one case of fatal hemiplegia and six of post-typhoid insanity being noted. In seventy-five cases the diazo reaction was positive, and in four cases (all fatal) cancrum oris occurred. Seventeen cases showed typical lesions post-mortem, and in eleven there were perforations. The fever was usually remittent in type, and fell by lysis. Rose spots, though often observed, were less common than in adults, and bed sores were seldom seen. There were thirty-two relapses in the series, and of seventy cases in which the Widal test was tried, fifty-eight were positive. The mortality for the whole series was 14.2 per cent., but of the cases occurring since 1899 the mortality was 10 per cent. The general management of the cases was in recent years about the same as that of adult cases. Hydrotherapy was used quite frequently, and intestinal antiseptis discarded as useless after fair trial. During the period when the Brandt treatment was used the mortality was about 11 per cent.

Dr. Atkinson: In the typhoid fever of children the absence of rose spots, the presence of constipation rather than diarrhea, and the mild course are the most striking features. The temperature is usually easy to control, and should be treated with baths, and not with antipyretics.

Dr. Osler: There can be no question of the immunity of *young infants* to typhoid fever. Dr. Griffith some years ago could only find 300-odd cases in the whole literature. It must be remembered that children's hospitals, like the one where Dr. Adams' series of cases was treated, function as "dumping grounds" for the community, and the worst cases therefore are seen in hospitals. This explains the relatively high hospital mortality. Dr. Platt mentioned the features of about ninety cases of typhoid fever occurring in a children's hospital in Baltimore. The treatment was expectant, no antipyretics were used, and the cases were, as a rule, mild. Constipation was almost always present. A case of typhoid fever was reported in a seven-months' child taken from a mother with typhoid. Dr. Apt's series of 200 cases of typhoid in children was reviewed. One hundred and ninety-eight gave a positive Widal, fifty-five showed rose spots, two had perforation, and 10 per cent. relapsed. The general opinion was that the typhoid fever of children in

Baltimore is milder than the disease in other cities. Dr. Adams said that his series included every death during the course of the fever, no matter what the cause, four cases of undoubted typhoid having died of tuberculosis. Severe cases are undoubtedly seen, but so long as the fever remains within bounds and mental disturbance is absent little treatment is needed.

The St. Louis Hospital of Paris—Dr. Osler.—This hospital, founded by Henry IV in 1657, is now a great medical center for the study of syphilis and skin diseases. Four things make this true—first, the enormous number of patients; second, the character of the men on the hospital staff; third, the liberal laboratories, and fourth, the splendid museum and library. The wonderful St. Louis collection of models of skin diseases is of great use to anyone interested in this department of medicine. All of these are lifelike, but the models of the various forms of drug rashes and of the erythemas are particularly good. The great Foulard Library, with its perfectly complete collection of works in all tongues dealing with syphilis and skin diseases, is easily accessible to students.

Dr. Platt showed a case of congenital dislocation of the hip. The patient was a girl of ten years, who a few years ago had shown only a slight disability of the hip. This had since become much worse, and telescoping of the limb had occurred. The case showed two characteristic features of congenital dislocation—free rotation of the head, the trochanter remaining almost stationary, and the failure of the lumbar spine to move with any motion of the affected leg. The ligamentum teres was probably absent in this case, and the open operation was advised by Dr. Platt.

MEETING HELD NOVEMBER 20, 1903.

Dr. Gilchrist showed a case of blasto-mycetic dermatitis and of epithelioma of the nose cured by x-ray treatment.

The Treatment of Bowlegs and Knockknee—Dr. R. T. Taylor.—In the treatment of rachitic deformities braces have been found expensive, tedious, and uncertain. Three operations may be done—osteotomy, osteoclasis, and epiphyseal lysis. The real cause of these two conditions is an abnormal curve of femur, tibia, or both, and not a lengthening of the internal condyle, as the text-books say. The aim of the treatment is "centric correction"—that is, an operation performed at the apex of the deformity. Osteotomy has given good results in aseptic cases, but infection has occurred and has caused serious trouble. Osteoclasis is quickly done, is free from the dangers of sepsis, never results in delayed union, and leaves a hinge of bone which keeps the fragments together when healing. A new osteoclast working on the lever principle was presented. It was claimed to accomplish its purpose almost instantaneously, and, therefore, to require little anesthesia. A new method of recording rotation in lateral curvature of the spine was also presented by Dr. Taylor. The patient was placed on the stomach, a yardstick laid over the back with the middle point at the spinous process of the vertebra, and the angle made by this stick with the line of the floor measured by means of a right-angled triangle graduated for the purpose.

Dr. Platt: After the fifth year the bones harden and braces are useless, but good results are obtained before this age. Later, operative procedures must be resorted to. Osteotomy is usually the preferable operation, and must always be done in the sabre-shaped deformities with forward bend. Many cases of bowlegs are seen in children and few in adults, and probably Nature cures many of these patients.

Dr. Taylor: Knockknee may be outgrown, it is true, but we cannot prophesy it in any given case, and so have no right to trust to it. Epiphyseotomy, though mentioned as an operation, is really impossible. Blanchard tried it in several cases, but he always got a tear of the lateral ligaments of the knee and of the biceps tendon.

Brisement Forcé Treatment of Clubfoot—Dr. Sidney M. Cone.—Modeling methods in orthopedic surgery are based on Wolf's principle that the structure of bone is modified by the function which it has to perform. Wolf was a German engineer, who became a surgeon, studied carefully the mechanics of bone deformity, and left very careful photographic records. In his treatment the affected limb is put up in plaster and molded while this is soft. Two weeks later the position is further corrected by second molding, and by repetition of this process the required position of the limb is finally obtained.

Dr. Taylor: Wolf's work ought to lead to the abolishment of the pernicious treatment of clubfeet by operative removal of bone.

Dr. Platt: Many surgeons do remove bone to correct this deformity, and the results are good, though, of course, not perfect. The procedure is, however, a rational one.

Dr. Cone: Brisement forcé ought, of course, to be used preferably in young cases, but Lorenz tried it first in a man of twenty-eight with perfect results.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD OCTOBER 26, 1903.

Some Recent Cases of Extrauterine Pregnancy—Dr. Cullen.—Extrauterine pregnancy has recently in the Johns Hopkins Hospital been more frequent than usual, and probably many cases have in the past been overlooked. The first patient was a woman of thirty years, who was nursing her child, and hence gave no menstrual history. The symptoms were pain in the left side, absence of temperature, and a palpable mass which was movable. She made a good recovery after operation. The second patient had no symptoms until a sudden collapse, and two similar attacks several weeks later. There had been no hemorrhage and no temperature. The pelvis was found full of blood. The third patient showed the classical symptoms of collapse, pallor, distention, hemorrhage, and a palpable mass. The fourth and fifth cases were characterized by labor-like pains, and in the last patient of the series the diagnosis was somewhat difficult because she was at the time nursing a 10-months-old child, and the mass in the pelvis suggested a myoma.

The pathological specimens from these cases showed both extremes of tubal distention.

Dr. Osler: These cases are often seen at post-mortem, and some years back the diagnosis was practically never made, tubal pregnancies being always called pelvic hematoceles.

Dr. Cullen: Careful descriptions of this condition occur in the French literature before 1800, but Lawson Tait was the first to call careful clinical attention to extrauterine pregnancy.

A Case of Typhoid Arteritis—Dr. W. R. Steiner.—The patient was a boy, aged nine years. He complained of headache and weakness, but had had no nose-bleeds, nausea, vomiting, or diarrhea. His temperature was 101.8°, pulse 100, Widal reaction negative. Rose spots appeared later, and the spleen became palpable in three days. On the twenty-second day of the disease the temperature had fallen to 99.2°. The next day, however, it reached 103.8°, and there were all the symptoms of a relapse, with marked delirium, but the temperature reached normal on the thirty-ninth day. On the forty-first day numbness and tingling of the right index finger appeared, and gradually the pulse diminished in the right radial artery. There were tenderness, hardness and redness along the vessel, and the hand was cold and cyanotic. The fever ran a most discouraging course, bronchitis, a second relapse, and marked emaciation, with delirium, being the untoward features. The cyanosis of the arm, however, gradually disappeared, and thirty-five days after onset of the arteritis the pulse returned in the right brachial and axillary arteries.

Dr. Thayer: Several similar cases have been reported from the Johns Hopkins Hospital. In one patient the left femoral was involved, and in another an arteritis of the middle cerebral artery was found post-mortem. One patient, a girl of eight years, suddenly became unconscious and showed rigidity of the neck, with a typical syndrome of Weber, since which time she has had attacks of Jacksonian epilepsy pointing to thrombosis of a cerebral artery.

Dr. Futcher: Keen collected in his monograph 115 cases of arterio-thrombosis and 46 cases of subsequent gangrene.

The Treatment of General Infections, with Especial Reference to the Use of Silver Nitrate in Such Cases—Dr. Joseph Hume.—The surgical treatment of general infection aims at free drainage, stimulation, and increased elimination. The injection of salt solution, the administration of antitoxines, and the introduction of antiseptics into the blood illustrate these fundamental principles. It has often been observed that infection causes a rise in the leucocyte-count. It therefore seemed that possibly an effort artificially to increase the white-blood count was indicated. Silver nitrate has this effect, and hence it has been used in the treatment of infections. Possibly it does good by destroying the blood corpuscles and setting free anti-bodies. If so, a new principle in therapeutics has been established, namely, the introduction into the blood of a hemolytic agent. In the series of cases here reported 1 c. c. of a 10 per cent. solution of silver nitrate was mixed with 1000 c. c. of water. Of this mixture 500 c. c. was injected intravenously at a temperature of 110° to 115°. A chill, rise in temperature, marked drop in the leucocytes, followed by profuse sweating, were the phenomena observed in all cases. Several characteristic cases were reported. The first was a girl, aged sixteen years, suffering from streptococcus infection following an appendectomy. The usual surgical treatment did no good; the patient became extremely toxic, but following two injections of silver nitrate recovered completely. The second was a patient with a large peritoneal abscess, probably a general peritonitis. She was weak and irrational, and became rapidly worse in spite of treatment. The temperature had reached 104°. Silver nitrate was given three times, with the usual phenomena following. After each injection there was some improvement, and the patient was finally discharged well. Another case of streptococcus infection, very toxic and delirious, was similarly treated, and after the third injection made a perfect recovery. Ten cases of pyogenic infection have been treated by Dr. Hume with silver nitrate. He has had but one death, and that from intercurrent infection. No local results have been observed except two cases of mild phlebitis.

Dr. Pancoast: Dr. Hume's cases had all been given up, so his material was not promising. The destruction of blood is the only result which silver nitrate has in common with salt solution and formalin; hence this may explain the effect of these agents in infections.

Dr. Thayer: There is nothing in the literature to support the theory that destruction of leucocytes sets free anti-bodies. The relation between leucocytosis and prognosis was long ago made the basis of treatment by the administration of turpentine in pneumonia. The reappearance of an excess of leucocytes is according to Weigert's law of the tendency of the human body to overproduction. Theoretically, it is poor therapeutics to attempt to destroy the blood of a patient whose powers are already being severely drained. Practically, this method of treatment has apparently done some good, but very positive experimental evidence is necessary to make it of general use.

Dr. Cole: It must be remembered that many cases of streptococcus infection recover without treatment. In a series of forty-nine cases of general infection, nineteen from which the streptococcus was isolated got well, and this summer in the Johns Hopkins Hospital a patient desperately ill with streptococcus infection suddenly began to improve and made a perfect recovery.

Dr. Emerson: Ordinary salt solution, even though not perfectly isotonic, is *not* hemolytic; hence it does nothing but good to the blood corpuscles. The blood therefore is not laked, and the apparent destruction of white-blood corpuscles is really only a leucopenia. If blood were actually destroyed by silver nitrate injection, restoration would not be so rapid as it has seemed to be in Dr. Hume's cases.

Dr. Reik stated that one of the cases in Dr. Hume's series had come to him first with a general infection following thrombosis of the lateral sinus. The patient was *in extremis* and had been given up, metastatic abscesses having already formed. Improvement and recovery followed the use of silver nitrate.

MEETING HELD NOVEMBER 2, 1903.

Exhibition of Medical Cases—Dr. Cole.—Three cases of typhoid fever with meningeal symptoms were reported. The first patient showed contraction of the neck and muscular rigidity, and typhoid bacilli were isolated from the cord. In the second case lumbar puncture was done, with subsequent improvement. From the spinal fluid which was under tension typhoid bacilli were isolated. Later they were obtained from the blood, and, following a furunculosis, staphylococci also appeared in the blood. This is the only case of secondary blood infection which has occurred during typhoid fever in the Johns Hopkins Hospital. The third patient had a severe attack of typhoid, with bronchitic and meningeal symptoms. Typhoid bacilli were isolated from the spinal fluid. Cases of prolonged fever, with nervous symptoms, should always make one think of typhoid fever, and lumbar puncture is indicated. Dr. MacCallum showed the pathological specimens of the third case reported by Dr. Cole. There was a distinct exudate over the brain and cord. The gall-bladder was distended, covered with exudate, filled with a suspension of typhoid bacilli, and in two places had perforated. This feature would seem to indicate that operation in typhoid cholecystitis is indicated.

The Late Effects of Typhoid Fever on the Heart and Blood-Vessels—Dr. Thayer reported the results of his studies made during the past two years on the vascular features of typhoid fever. The acute vascular conditions, such as thrombi, etc., are well enough known, but the relation of typhoid to arteriosclerosis has never been fully worked out. Landouzy, however, holds that typhoid fever is next in importance to rheumatism in producing angio-cardiac changes. Dr. Thayer had examined 182 patients who had typhoid fever from one month to eighteen years previously. In 60.4 per cent. the pulse varied from 60 to 90, and in thirty cases it was somewhat irregular. The blood-pressure was in all cases somewhat high, and over 50 per cent. of the cases over twenty years of age showed palpable arteries. A series of observations was made on the blood-pressure of 276 normal individuals, and the average was somewhat lower than in patients who had had typhoid fever. In another series of observations in normal individuals the percentage of palpable arteries was also somewhat smaller than in the typhoid cases. Forty-six and four-tenths per cent. of the cases showed cardiac murmurs, six patients having mitral insufficiency, and one showing the rare condition of aortic functional disease. Eighty-two cases showed reduplication of the second sound, and there was one case of probable mitral stenosis, and one of marked anterior-sclerosis.

Dr. Emerson reported an analysis of 1000 cases of albuminuria, and stated that his study confirmed Dr. Thayer's opinion of the effect of typhoid fever on the arteries. Strange to say, however, the analysis shows that it has not much effect on the kidneys, though the opposite would be expected.

Dr. Thayer called attention to the fact that albuminuria is almost constant in typhoid fever, but however bad the urine, the clinical symptoms of nephritis are rarely seen.

Dr. Reik reported a new remedy for tinnitus aurium. The origin of this condition has never been clear, though it has been supposed to be due to an increase in intralabyrinthine pressure and resultant stimulation of the auditory nerve. Dr. Reik's experiments on dogs showed that any irritation of the sensory nerve in the ear caused a depressor effect which is contrary to the usual law.

These results confirm Dr. Theobald's theory that tinnitus aurium arises from vibrations starting from the blood-vessels. With the idea of raising blood-pressure suprarenal extract was employed by Dr. Reik both locally and internally. Thirty-five cases were reported cured, most of them rapidly; fifteen were improved, and only one showed any bad effects.

Dr. Burnam showed the pathological specimens of four rather unusual appendices. The first was from a colored woman, aged twenty-eight years, who had had an abdominal tumor without temperature. An abscess with infiltrated walls formed in the abdominal wall, and scrapings from it showed large numbers of the ray fungus. At the second operation the appendix was found to be the cause. Death ensued, and at autopsy the appendix showed marked submucosal thickening. There were abscesses also in the lungs. An interesting feature of the case was that the leucocytes never rose, though the temperature reached 106°. A case of primary carcinoma of the tip of the appendix and two cases of primary tuberculosis of the appendix were also shown, and Dr. Burnam stated that these cases gave one more reason for the need of early operation even in chronic appendicitis, inasmuch as the appendix in these cases may be the site of some very serious condition.

MEETING HELD NOVEMBER 16, 1903.

Demonstration of Medical Cases—Dr. Osler.—The first patient was a man with aneurism, causing a protruding tumor in the neck. There was a luetic, but no alcoholic history. The onset occurred two years ago, with pain in the shoulder, swelling of the feet, and gradual development of the usual symptoms. Distal ligation of the right carotid was done, and the tumor immediately increased in size—a feature quite unique in medical literature. The second case was a woman who showed peculiar mottling of the back and hands. The disease appeared after a mental shock, began with pain and numbness in the foot, and was characterized by areas of local cyanosis, alternating with livid spots.

A Case of Generalized Neuritis from Lead—Dr. Thomas.—The patient, a man of forty-six, gave a marked alcoholic history, but the definite onset of his illness had occurred about two and one-half weeks after entering an enamel works. There was marked delirium at onset, increasing weakness, and some pain in the right shoulder. Distinct blue line in the gums, complete paralysis below the shoulder, absence of reflexes, slight dullness of sensation at the periphery, some muscle tenderness, granular degeneration of the red-blood corpuscles, and an irregular temperature were the features of the case. General lead palsy is a rare condition, only about twelve cases having been reported in the literature.

Dr. Hurd: In lead paralysis the muscles most used are the ones most affected. In this patient alcohol cannot be eliminated as an etiological factor.

A Case of Blasto-myccetic Dermatitis—Dr. Gilchrist.—The disease began seven months ago as a pimple on the right wrist. This changed to a nodule, broke down, and formed a papilloma. Later, lesions appeared on the thumb, thigh, and face. Pus squeezed from the lesion gave a pure culture of the blasto-mycelium. This disease, of which there are about fifty cases in the American literature, must be diagnosed from tuberculosis and lues. The clinical features, with a microscopic examination of the pus, make the distinction possible. Treatment consists of potassium iodide internally, curettage, and the use of the *x*-ray.

Metabolism in Pregnancy.—Dr. Slemons reported the results of studies made on four women whose metabolism was followed for about thirty-five days. The diet was carefully regulated and weighed; all the excreta (including urine, lochia, and milk) were carefully measured, and daily estimates were made of the amount of urine excreted and the total nitrogen and ammonia output. The series showed a definite diuresis just before and just after delivery. All the cases showed a tendency of the mother to store nitrogen during pregnancy, and the case who bore live twins emphasized this tendency. The series also showed that during pregnancy there is a tendency for actual storing up of ingested fluid to take place. The ammonia excretion shows definitely that a fetus in utero causes changes in the mother's metabolism. It drops to normal after delivery and tends to become normal when the fetus dies in the womb. Relative suppression of renal activity explains the changes in the amount of excreted urine during and following labor. The diminution in nitrogen output is probably due to impairment of the kidney cells. The high ammonia output at the time of delivery cannot yet be explained. During the puerperium all the cases in Dr. Slemons' series showed a definite diuresis except the one who bore dead twins. There was a rise in the nitrogen output, usually beginning about the second day of the puerperium, and probably due to regressive changes in the mother. The ammonia fell gradually to normal. The series showed that metabolism tends to assume a non-pregnant type when the fetus dies in utero.

Dr. Emerson: Dr. Slemons' report is particularly valuable, because, in spite of the importance of an accurate knowledge of metabolism, no really good observations exist on which to base conclusions.

Book Reviews.

A Text-Book of Pathology. By Alfred Stengel, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Fourth edition, thoroughly revised and enlarged. Octavo volume of 933 pages, with 394 text-illustrations, many in colors, and 7 full-page colored plates. Cloth, $5 net; sheep or half morocco, $6 net. Philadelphia, New York and London: W. B. Saunders & Co.; Baltimore: Medical & Standard Book Co., 3 West Saratoga street. 1903.

The author calls attention in the preface of this edition that within the last two years such a mass of important work has appeared in pathology that the task of selecting and incorporating in the present edition that which will prove lasting has not been an easy one. He has therefore kept before him the necessity of incorporating only demonstrated facts and avoiding unproved hypotheses. The author, himself being a clinician, keeps constantly in mind the relation of pathology to clinical medicine. The section on General Pathology has been much revised; the subject of immunity is briefly but very clearly discussed; the article on tumors is treated in a manner which will prove satisfactory to students. The general arrangement of the Special Pathology covers the diseases of the various systems and organs in a manner that leaves little to be desired.

The author has added an appendix on Pathologic Technique. While desirable, it is scarcely of great value when one has access to special works in this department.

The general appearance of the book is good; it covers the ground in a clear and fairly concise manner. We think it will fill the place in the college curriculum.

ELECTRO-STATIC MODES OF APPLICATION, THERAPEUTICS, AND THE USES OF THE ROENTGEN-RAY. By William Benham Snow, M.D., Professor of Electro-Therapeutics and Radiotherapy in the New York School of Physical Therapeutics, etc. Second edition, revised and enlarged. Price, cloth-bound, $3. New York: A. L. Chatterton & Co., 97-99 Reade street.

In this book Dr. Snow has given a clear summary of the practical elementary knowledge necessary for the use of the static current. Dr. Snow is a strong advocate of the advantages of the static machine over the induction coil. He does not fail, however, to cite the unreliability of the static machine under conditions of atmospheric humidity, chief among which is the difficulty of charging the machine and the great diminution of the current in use. To partially obviate this difficulty he advises a twelve or more plate machine giving a current of much greater amperage. The gradual degeneration of the machine in use and the method of renovation are described in a practical way. A simple method of determining the poles is given. For maintaining the proper conditions within the case Dr. Snow employes quicklime. He has found this more satisfactory than calcium chloride. A dry room is essential in any case to the proper operation of the machine.

The classification Dr. Snow uses for the static currents or "static modalities" is simple and satisfactory from medical use. The three main classes are the convective, disruptive, and conductive discharges. Among the convective discharges are included static electrification, the breeze discharge, the brush discharge, and the spray, together with the high-frequency discharge, the character of the latter depending mainly on the form of electrode used. The disruptive discharges include the various forms of sparks—long, short, and friction. The conductive discharge comprise the static induced current and the wave current.

The book is divided into three sections, the first being devoted to the use of the static modalities. The method of connecting the machine for the various currents, the mode of administration, and the therapeutic use of the currents are clearly described. The second and third sections are devoted, respectively, to radiography and radiotherapy.

On the therapeutic use of the currents Dr. Snow is quite enthusiastic, and is equally enthusiastic as regards the use of the *x*-ray. The results described in many diseases beyond the reach of medicine are very remarkable. The paralyses, neuroses, and muscular contractions are reported to yield results not obtained by any drug or other method of treatment. The well-known effect of the static and high-frequency currents in lessening pain is reviewed by Dr. Snow. The results in radiotherapy, in sarcoma, carcinoma, and diseases of the skin are most encouraging. Naturally, a dubious prognosis is given when the malady is deep seated or the bone involved.

In the section on radiography the relative advantages of the coils and static machines are tabulated. The worst feature of the static machine is the possibility of utter failure in damp weather. Dr. Snow considers the machine capable of much wider use than the faradic-induced currents.

The value of a work dealing solely with static electricity will be appreciated by all those interested in electro-therapeutics and diagnosis and by all those who have occasion to use the static machines.

Correspondence.

AMERICAN AND INTERNATIONAL CONGRESSES ON TUBERCULOSIS AND TUBERCULOSIS EXHIBITS FOR THE YEARS 1904 AND 1905.

To the Editor Maryland Medical Journal:

Dear Sir—During the past few months I have been the recipient of a large number of inquiries concerning the various tuberculosis congresses (American and international) which have been projected for the years 1904 and 1905. The multiplicity of these various congresses and the similarity of their names leads naturally to great confusion. It would be really too great a task to undertake to answer in full and individually all the letters with which I have been honored. I therefore ask you to grant me the space to give the desired information in your esteemed paper, so that all the readers of the JOURNAL who may be interested will have a clear idea of the various congresses, their officers, and time and place of meeting.

It is announced that a congress on tuberculosis is to be held in St. Louis on October 3, 4, and 5, 1904, under the name of the International Congress on Tuberculosis. Upon careful inquiries I learned the following facts about this congress: Mr. Francis, the president of the St. Louis Exhibition, had been approached by the officers of the American Congress on Tuberculosis, which was founded some years ago by Clark Bell, Esq., a lawyer of the city of New York, to sanction the holding of an international congress on tuberculosis in connection with the Louisiana Purchase Exposition. From a letter received from Dr. E. J. Barrick of Toronto, Canada, the now president of this American Congress, I learn that Mr. Francis has appointed the abovementioned Mr. Clark Bell chairman of the committee on organization. Mr. Clark Bell is also the treasurer and chairman of the executive committee of the American Congress on Tuberculosis, season 1903-1904; a Mr. Samuel Bell Thomas of 290 Broadway, New York, is the secretary of the latter. The officers of the international congress are not yet elected. I was desirous to learn the names of other medical men interested in this congress, and Dr. Barrick very kindly wrote me on November 16 that he had asked Mr. Bell to furnish me the desired additional information, but nothing has thus far been received.

The other international tuberculosis congress announced is the one to meet in Washington, D. C., April 4, 5, and 6, 1905. It is to be held under the auspices of the American Congress on Tuberculosis for the Prevention of Consumption. The following is a list of the officers of this latter organization:

Honorary president, Dr. Henry D. Holton, Brattleboro, Vt.
Member executive council, Dr. Chas. O. Probst, Columbus, Ohio.
President, Dr. Daniel Lewis, New York.
First vice-president, Dr. J. A. Egan, Springfield, Ill.
Second vice-president, Dr. Frank Paschal, San Antonio, Texas.
Fourth vice-president, Dr. Irving A. Watson, Concord, N. H.
Fifth vice-president, Dr. Chas. Wood Fassett, St. Joseph, Mo.
Secretary, Dr. George Brown, Atlanta, Ga.
Treasurer, Dr. P. H. Bryce, Toronto, Canada.

Before going any further I would like to call the attention of my readers to the difference in name of the two American congresses. The one is "American Congress on Tuberculosis," the other "The American Congress on Tuberculosis for the Prevention of Consumption."

The congress which was to meet under the name of "Congrès International de la Tuberculose" at Paris from September 26 to October 1, 1904, has been recently postponed to the year 1905. The president of this congress is Professor Brouardel, honorary dean of the Faculty of Medicine of Paris. The general secretary is Dr. M. Letulle, professor agrégé of the Faculty of Medicine, residing at 7 Rue Magdebourg, Paris. This congress will be divided in two sections—the medical and the social.

I. In the medical section the following subjects will be discussed:

(1) New methods for the treatment of lupus.

(2) New methods for the early diagnosis of tuberculosis.

(3) Comparative studies on the different forms of tuberculosis.

II. In the social section:

(1) Etiological factors in tuberculosis.

(2) Value of different means for the treatment of tuberculosis.

(3) The voluntary insurance and the mutual societies in the combat against tuberculosis.

The congress will furthermore form a technical section under the name of "Museum of the Congress."

There will be held during the coming year, independently of the above-mentioned congresses, two tuberculosis exhibitions—one in Baltimore, Md., and the other in St. Louis, Mo. The Baltimore Tuberculosis Exhibition will be held in January, 1904, under the combined auspices of the Tuberculosis Commission, the State Board of Health, and the Maryland Public Health Association. Details are in charge of Dr. W. S. Thayer, president of the commission; Mr. John M. Glenn, secretary; Dr. John S. Fulton, secretary of the State Board of Health, and Dr. Marshall L. Price. Dr. Henry B. Jacobs has been elected chairman, and 250 prominent professional men and laymen have been asked to act as an advisory committee. A series of lectures will be given, the object of which will be to present the extent and effects of the disease in a striking manner. The pathologic, hygienic, sanatorium, and sociological aspects of the tuberculosis problem will be practically demonstrated by specimens, charts, literature, instruments, photographs, and plans. All communications concerning this exhibition should be addressed to Dr. Marshall Langton Price, 10 South street, Baltimore, Md.

The other tuberculosis exhibition will be held in St. Louis in connection with the Exhibition of Social Economy and under the sub-section of Hygiene, of which Dr. J. N. Hurty of Indianapolis is superintendent. To avoid multiplicity of exhibits Dr. Hurty has put himself in communication with the general secretary of the International Bureau for the Prevention of Consumption at Berlin, Professor Pannwitz, so that the exhibits which the European countries contemplate to send shall also come under his direction.

All indications point toward success of both exhibits, and it is to be hoped that they will fulfill their high purpose and at the same time be a credit to American physicians and hygienists.

Considering the various congresses, I do not hesitate to express a feeling of deep anxiety. The first one mentioned, which, for reason of brevity, I will call "the Bell Congress," because it owes its inception to Mr. Clark Bell, has, to my knowledge, not the support of our best-known men in the field of clinical medicine, hygiene, tuberculosis pathology, or tuberculo-therapeutics.

The second congress in point of time, which again for sake of brevity and clearness I may call "the Lewis-Brown Congress" (names of the president and secretary), while it has many distinguished men of various State and provincial boards of health among the members, has, like the Bell Congress, thus far not among them the men we are wont to look up to as leaders in movements of this kind. No such men as Biggs, Billings, Bowditch, Flick, Jacobi, Janeway, Klebs, Osler, Otis, Trudeau, Tyson, are connected with this congress.

What are our *confrères* across the water to think if they hear of two American congresses on tuberculosis and each having an international one under its auspices? The European authorities found it best, instead of having a triennial congress, to have one more year to intervene. This will make the congress in Washington and the one in Paris convene in the same year (1905).

I hope this letter, which I address to the medical profession in America, will result in a satisfactory solution of this very complicated problem. If President Francis of the St. Louis Exposition desires that a tuberculosis congress shall be held in St. Louis, let him call to his aid some of the men which I have mentioned as leaders in our profession. They will counsel with him on the advisability of such a congress, and if it is decided that one should be held, Mr. Francis can be assured that the best element of Europe and America will come to St. Louis to contribute to its success.

The officers and members of the Lewis-Brown congress must realize that they cannot expect to have their international meeting in Washington to be successful when, six months later, there will be an international congress in Paris. I hope that there will be enough patriotism and national pride for all interested to realize that two American congresses on tuberculosis is an anomaly, and that, if the St. Louis congress is to be a success, it must be in the hands of medical men well and favorably known in this country and abroad.

As a solution of the problem, I beg leave to suggest the following: During the tuberculosis exposition in Baltimore next January all interested should meet on a certain date on this neutral ground for the purpose of coming to an agreement about a single representative national or international tuberculosis congress to be held in America. There, too, should be formed a national committee on tuberculosis, which is to be in touch with the International Tuberculosis Congress which will convene in Paris in 1905.

S. A. Knopf, M.D.

16 West 95th street, New York.

MARYLAND MEDICAL JOURNAL.

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BALTIMORE. JANUARY, 1904

THE MARYLAND TUBERCULOSIS EXPOSITION AND THE AMERICAN CONGRESSES ON TUBERCULOSIS.

DR. S. A. KNOPF of New York has sent us for publication a letter about the rival American Congresses on Tuberculosis. This letter has already been published in the medical weeklies, but we have suspended our rules and printed it in the present issue as a text for editorial remarks.

The American Congress on Tuberculosis, the "Bell Congress," was born in New York about four years ago. The circumstances of its birth were most unpromising, and the babe itself was unattractive from its first squawk. The country was scoured for sponsors, and, through the indiscretion of the governors of several States, respectable sponsors were found. But the bantling did not grow in wisdom, stature or favor, and its foster-parents, unanimous in their despondency, disagreed about the remedy. One party believed that its destiny should be worked out in the house of its birth, and the other party looked upon its family ties as absolute bars to the future of the babe. One party was bold and the other adroit. None knows which was which, but everybody knows that neither was both. Presently there were two American Congresses on Tuberculosis. One was a "rump" congress. Both parties agree to that, but they differ as to the time, place, and persons of the "rump" congress; and to the outsider the question seems unimportant.

We are convinced that the American Congress on Tuberculosis (the four-year-old) was quite unpresentable, and must have remained so in spite of the utmost patience and labor of its sponsors.

The American Congress on Tuberculosis for the Prevention of Consumption (the yearling with a ribbon) might perhaps respond to considerate and skilful treatment.

Both congresses are ambitious to bring the International Congress of Tuberculosis to the United States. The "Bell Congress" announces an International Congress on Tuberculosis at St. Louis during the coming exposition. Mr. Francis, president of the Louisiana Purchase Exposition, has, in fact, appointed Mr. Clark Bell of New York chairman of the committee of organization for an international congress. Moreover, the skill and energy which got sponsors for the American Congress on Tuberculosis in the first place has now definitely engaged the federal government in the support of the promised international congress at St. Louis in October, 1904. The Department of State is said to have instructed all our foreign ministers to support the project. It seems certain that the government of the United States has so far endorsed the enterprise of the "Bell Congress." It is perhaps within the power of the State Department to prevent the utter failure of an international congress of tuberculosis at St. Louis under such auspices. But the Department of State must supply every pennyweight of the necessary influence, and this will hardly be worth while unless the Department is too deeply engaged to withdraw its support without loss of dignity.

Meanwhile the other American Congress on Tuberculosis, the "Lewis-Brown Congress," has announced an International Congress of Tuberculosis at Washington in April, 1905, six months after that in St. Louis. The "Lewis-Brown Congress" has not "invited" governors, nor solicited docile vice-presidents, nor enlisted a Department, nor done any other slick thing. Its officers have endeavored to secure the interest—indeed, to engage the leadership—of the recognized leaders. They are doing their very best to make a truly representative congress. But the leaders are in doubt whether the "Lewis-Brown Congress" can live down the blemish of its disputed title. The premature announcement of an international congress is also unfortunate. It is not at all likely that an International Congress of Tuberculosis will occur in America in either 1904 or 1905. Paris has, as Dr. Knopf says, been selected as the next meeting-place. In this connection it is worth mentioning that one of the secretaries of the International Congress visited America a few months ago. If this gentleman had made any arrangements with the "Bell Congress," some announcement would most certainly have been made. An understanding with the "Lewis-Brown Congress" would as certainly have been published. It appears from Dr. Knopf's letter that Dr. Knopf was not consulted. Whom did the secretary consult, and what did he report on his return to France?

Dr. Knopf suggests that "during the tuberculosis exposition in Baltimore all interested should meet on a certain date on this neutral ground for the purpose of coming to an agreement about a single representative national or international tuberculosis congress to be held in America."

Our tuberculosis exposition was planned originally for the instruction of the people of Maryland. Through the generous interest of friends outside of Maryland the project has outgrown its original scope and purpose. The exposition will be worth "going miles" to see, and we shall be delighted if it satisfies our visitors. Our invitations will certainly reach a majority of the "Lewis-Brown Congress," and one member of the "Bell Congress" is sure to be invited. This will happen without reference to the official roster of either congress.

Without a doubt the leaders of the American crusade against tuberculosis will be in Baltimore in the last week of January, and if the occasion seems favorable for "an agreement about a single representative national or international tuberculosis congress," the best medical men in Maryland will help to bring about such an agreement.

DUTY OF THE PROFESSION CONCERNING THE CARE OF THE INSANE.

It has been decided that the profession will seek no improvements in the medical-practice law at the coming session of the legislature. This means that the organized profession will not propose any new legislation on the subject. It does not follow that no new legislation will be proposed, but only that the anti-medicals have leave to move. The profession has very little to lose, and the anti-medicals correspondingly little to contend for, so that we may have a quiet winter. It is not certain, however. It often happens that to suspend operations is to offer the enemy a choice of position.

The influence of the profession will be as much needed at Annapolis this winter as ever before, and on one subject at least our combined energies should be brought to bear. The Lunacy Commission will present a bill providing for State care of the insane. Efforts in this direction have been made at several past assemblies, and while it is a reproach to the State that these efforts have failed, the failure is a particular reproach to the medical profession, for if the people of Maryland do not apprehend the extravagance and the inhumanity of our present methods, that is a fault that may be amended by sound preaching, but if the medical men are not impressed with these disgraceful conditions, their fault persists in spite of the constant and earnest representations of the Lunacy Commission and of the leading alienists in this State. The Lunacy Commission has prepared a little eight-page pamphlet stating the facts which indicate a most urgent need of reform in the treatment of the insane. It does not seem possible that any physician can read this brief paper and escape a sense of personal and professional obligation to extend its influence to those about him.

It must mean something to the people of Maryland that there are places where insane persons have every chance of recovery that the science of medicine can offer and every amelioration which a humane public can provide. Surely we must be thankful that we can do so much for some of our insane. But other insane persons are shut into ramshackle almshouses, under the supervision of ignorant superintendents, with unskilled medical attendance or none, without nurses or attendants, without one humane consideration of their mental infirmity, damned to be insane.

What does it mean that in one county institution five men and two women were found shut into one nasty room fifteen feet square; that in another county an insane man spent his winters in a miserable cell and his summer days chained to a tree; that another man spent years in an outhouse, almost always naked and always filthy? The people are not in possession of these facts. These are not the Dark Ages nor ours a benighted people. Such things as the secretary of the Lunacy Commission has over and again described in his reports are intolerable and will not be tolerated once the people are fully informed.

The people of the State will choose as soon as the choice is offered them between State supervision, on the one hand, with "entertainment, occupation, kindly care, scientific treatment," and the county system, on the other, with beastly confinement, no occupation, no entertainment, exposure of women to outrage, no medical treatment. If the gentleman who knows most of this subject were to count aloud, in the hearing of fifty intelligent women, the illigitimate offsprings of insane patients in the county institutions, it would matter little whether he counted six or six hundred; a revolution would be inevitable. Let us get the facts into the minds of the people. Fifty medical men can do that, and afterwards the economic aspect of the question will be a trivial detail. We shall have State care of the insane.

Medical Items.

Dr. Morris C. Robins, associate professor of clinical medicine in the University of Maryland and medical assistant to the State Board of Health, has removed from Baltimore to Spokane, Wash.

Three deaths from bubonic plague occurred in San Francisco in the last ten days of October. These are of no particular consequence. What signifies is the re-election of a musician named Eugene Schmitz to be mayor of San Francisco for another term.

The year 1904 ends with an outbreak of smallpox in Garrett county. There is one case in Talbot county. There have been four deaths in Garrett county, and fifteen persons are now sick with the disease. There is no smallpox elsewhere in Maryland.

The commissioners for the new City Hospital in Cincinnati will open a prize competition for the best plans for the new buildings. The site includes fourteen acres, and the pavilion or cottage plan is preferred. The prizes are of sufficient value to interest the best architects in the country.

Progress has been made in the matter of professional organization in Maryland. The Wicomico County Medical Society was organized, with Dr. F. M. Slemons, president; Dr. E. W. Humphreys, secretary; Dr. J. I. T. Long, delegate to the State Faculty. The Dorchester County Medical Society was organized, with Dr. Benjamin L. Smith, president; Dr. Thomas H. Williams, vice-president; Dr. Guy Steele, secretary. The Garrett County Medical Society has been organized, with Dr. W. H. Ravenscroft, president; Dr. Henry W. McComas, vice-president; Dr. John E. Legge, secretary. County societies have also been organized in Carroll county, Charles and Somerset.

Greenwich, Conn., will have a group of four stone buildings, three for infectious diseases and one for emergency cases, as a gift from Mr. Robert M. Bruce and his sister, Sarah E. Bruce. The value of the gift is $75,000. Baltimore will accept a similar gift provided it can be located at a greater distance than one mile from any public square, park, trolley line or lamppost. Mr. Bruce, the benefactor of Greenwich, is the eccentric citizen who complained that his own taxes were, like those of other rich men, too low, and he says that he will reimburse the town to the full amount of its loss through too low assessments upon his property. In pursuance of this plan he will give the city, besides the isolation hospitals, a town hall costing $125,000.

The Tuberculosis Exposition will open on January 25 at McCoy Hall. The opening meeting will be held at 8 o'clock on Monday evening. Prominent officials of the State and of the city will be present, including Governor Warfield and Mayor McLane. The orator of the evening will be Dr. E. L. Trudeau of Saranac, N. Y. At 5 o'clock each afternoon after Monday there will be lectures upon the various aspects of the tuberculosis problem. The speakers will be Dr. Mazyck P. Ravenel of Philadelphia, Dr. S. A. Knopf of New York, Mr. Frederic Hoffman of Newark, N. J.; Mr. Ernest Poole of New York, Dr. Vincent Y. Bowditch of Boston, Dr. George J. Adami of Montreal, Dr. Lawrence Flick of Philadelphia.

The exposition is organized under the joint auspices of the Tuberculosis Commission, the State Board of Health, and the Maryland Public Health Association. These have called to their aid a large general committee of 250 leading citizens. This general committee met in the Donovan Room at McCoy Hall on Wednesday, December 9, when an executive committee was appointed by the chairman, Dr. Henry Barton Jacobs. This committee met a few days later at the office of Dr. Jacobs and was divided into subcommittees, as follows:

Ways and Means—Mr. Chas. M. Howard, chairman; Mr. Wm. Buckler, Dr. J. B. Schwatka, Mr. John M. Glenn.

Decorations and Arrangements—Mr. J. B. Noel Wyatt, chairman; Dr. John S. Fulton, Dr. Charles W. Mitchell, Dr. Jos. E. Gichner, Dr. Henry Barton Jacobs.

Pathological Anatomy and Bacteriology—Dr. W. G. MacCallum, chairman; Dr. Wm. H. Welch, Dr. Wm. Royal Stokes, Dr. Charles F. Potter, Dr. Harry B. Marshall, Dr. Marshall L. Price.

Press and Publicity—Mr. Nat G. Grasty, chairman; Dr. Standish McCleary, Dr. S. J. Fort, Mr. Fabian Franklin.

Home Treatment and House Hygiene—Dr. Lilian Welsh, chairman; Dr. Mary Sherwood, Mrs. John J. Abel, Miss Adelaide Nutting, Dr. William Osler.

State and Municipal Prophylaxis—Dr. John Rührah, chairman; Dr. C. Hampson Jones, Dr. Wm. Royal Stokes.

Tenements, Sweatshops, and Factories—Mr. John M. Glenn, chairman; Mrs. John M. Glenn, Rev. Arthur C. Powell, Mr. Jeffrey R. Brackett, Mr. Nat G. Grasty, Dr. Joseph E. Gichner.

Books and Portraits—Dr. Wm. Osler, chairman; Dr. Lyman, Dr. Louis E. Haman, Dr. Henry Barton Jacobs.

Speakers—Dr. Wm. Osler, chairman; Dr. William S. Thayer.

Hospitals and Sanatoria—Dr. H. Warren Buckler, chairman; Dr. Henry Barton Jacobs.

Charts and Diagrams—Dr. John S. Fulton, chairman; Dr. Marshall L. Price.

House-to-House Visits—Miss Adelaide Nutting, chairman; Miss Thelin.

The material for the exposition will come from all parts of this country and from Europe. The great amount of valuable information collected by the Tuberculosis Commission will be shown in statistical abstracts by means of charts and diagrams. The statistical exhibit will indeed form a large and important part of the display. Whatever admits of graphic presentation will be shown in that way. The records of mortality from tuberculosis in Baltimore for ten years past will be carefully analyzed and illustrated upon a large map. The tuberculosis mortality of the counties will be shown in a similar manner, though for a shorter period. From the experience of other countries the relations of tuberculosis to occupation, habits, heredity, housing, poverty, alcoholism, age, sex, and other etiological factors will be shown.

The Maryland Tuberculosis Commission has made especial efforts to discover the relations of tuberculosis in this State to the material welfare of the affected citizens and of the State. Data upon this subject are very difficult to obtain, but the commission is in possession of sufficient information to yield results which, if not quite conclusive, are at least highly suggestive.

An enthusiastic committee on home treatment and house hygiene will present all the devices which are anywhere in successful use and available to the 98 per cent. of consumptives who must be treated at home. The committee on tenements and factories is assembling the experience of other great cities in dealing with the housing of the poor and the hygiene of the workshop. The committee on sanatoria will be able to show photographs, architects' plans and drawings of every considerable institution in this country existing or projected for the treatment of tuberculosis. The exhibit of similar institutions in foreign countries will be, if not quite complete, at least truly representative. Reliable and comprehensive statements of the results of sanatorium work will form an interesting part of this display.

The committee on pathological anatomy and bacteriology will be as complete as it can be made. It will be kept somewhat apart from the rest of the exposition as a thing of rather technical interest. It will nevertheless be open to the general public.

The committee on books and portraits will illustrate the history of the subject.

All the methods employed by boards of health, organized charity, visiting nurses, etc., to prevent the spread of tuberculosis will be shown.

All the adjuvants and accessories of demonstrated utility in the diagnosis or treatment of consumption will be exhibited.

This will be, it is said, the first complete exhibition ever planned for the education of the public upon the cure and prevention of a single disease. The activity and enthusiasm of those engaged make the success of the project almost certain.

Every means will be used to enlist the interest of the whole people and to attract the largest possible number of visitors. Physicians are requested to speak of it in their daily rounds, and especially to impress the people that the exposision is not for the medical profession, but for all sorts and conditions of men. Arrangements will be made to take visiting parties through the exposition under expert guidance. Competent guides will be in attendance daily during certain hours, and by application at headquarters, 10 South street, those who cannot visit the exposition during these hours can make engagements suitable to their own convenience.

It is proposed that the exposition shall be open on Sunday afternoon, January 31, for those who cannot see it during the week.

Many visitors are expected from outside the State, and these will no doubt be repaid by what they see.

If the exposition is, as it promises to be, a success in respect of completeness and correct presentation, it will be highly creditable not only to those engaged, but to the whole State. But the best measure of its value will be the number of Marylanders who see it. For the plain people it was originally planned, and to them its message is of the deepest moment.

MARYLAND
MEDICAL JOURNAL

A Journal of Medicine and Surgery.

Vol. XLVII—No. 2 BALTIMORE, FEBRUARY, 1904 Whole No. 1029

REMARKS ON THE OCCASION OF THE OPENING OF THE TUBERCULOSIS EXPOSITION IN BALTIMORE ON THE 25TH OF JANUARY, 1904.

By William Sydney Thayer,
President of the Tuberculosis Commission of Maryland.

Ladies and Gentlemen:

A great medical classic, which marked the beginning of a new era in the world of biological science, opens with these words: "We are living in the midst of a great reform in medicine. In our day, for the first time in thousands of years, the whole area of this widespreading field of learning has been laid freely open to scientific research. Doctrines which belong to the oldest traditions of mankind are put to the test, not only of experience, but of investigation. For experience, proof is demanded; for research, reliable methods. Everywhere inquiry seeks out the most intricate conditions appreciable by the human mind; knowledge ramifies the countless minute details which disturb the sense of unity of the human organism, and seem to many more fitted to set forth an adornment of learning than an instrument of action."

Fifty years have not passed since Virchow wrote these lines, and what a change has come over the world! The spirit of investigation and research, the development of exact scientific methods based upon such observations have spread through every branch of biological science, and the fruits at first appreciable only to the trained and initiated student are now apparent to all thinking mankind. And what fruits! To consider but one branch of learning: Diphtheria has lost its terrors, yellow fever is almost under our control, cholera and plague, but yesterday the most terrible of the invisible adversaries of man, are now vulnerable enemies in an open field. Thousands of trained and enthusiastic students in hundreds of laboratories maintained by State aid or the generosity of public-spirited citizens, are systematically approaching the problems of prevention and cure of diseases, the nature of which was but a few years ago unknown. There never was a time more fraught with hope for the future.

But with all these advances and discoveries, there have come to us new duties and increased responsibilities. One of the greatest of modern biologists has recently said: "As we march onward toward the true goal of existence mankind will lose much of its liberty, but in return will gain a high measure of solidarity. The more exact and precise a science becomes the less freedom we have to neglect its lessons. Time was when we could freely teach that a whale was a fish, but since it has been definitely established that this animal is a mammal, the error is no longer permissible. Since medicine has become an exact science, the liberties of medical men have become materially restricted. We have already seen physicians legally condemned for neglecting to follow the rules of asepsis and antisepsis. Certain liberties, such as failure to vaccinate against smallpox, spitting on the floor, * * * and a multitude of others, are worthy of a barbaric past, and must disappear with the progress of civilization."

To-day we all realize and appreciate that if we knew how a terrible pestilence arises—and more than this, how it may be prevented—we have gained a new duty; we must each one of us do his utmost to prevent it. But we know also that individual effort, "The single deed, the private sacrifice," however unselfish and earnest and courageous, will be of little avail. It is only by combined and enlightened and continued labor that we can accomplish our ends.

Ladies and gentlemen, we know all these things about tuberculosis, and that is why we are here this evening, to take counsel together, to put shoulder to shoulder in the furthering of a great and noble work.

THE STATISTICAL LAWS OF TUBERCULOSIS.

By Frederick L. Hoffman,

Actuary of the Prudential Life Insurance Company,
Newark, N. J.

TUBERCULOSIS causes annually more than 150,000 deaths in the United States at the average age of thirty-five years. At this age the normal after-lifetime is about thirty-two years, so that the real loss of life covered, measured in time, is represented by 4,800,000 years per annum. If we assume that the net value of a year of human life after age thirty-five is at least $50, the real loss to the nation resulting from the disease (a large proportion of which is known to be needless) may be estimated at $240,000,000 per annum. These astounding and almost incomprehensible figures are far from being an exaggeration, but let us assume that only one-half of this mortality is preventable, and we have a net possible saving to the nation of $120,000,000 per annum. This estimate does not take into account the social, moral and sentimental value of at least 100,000 lives, which, under different conditions, might reasonably hope to continue for many years. The mortality from tuberculosis is, therefore, a problem compared with which all other social problems of a medical character sink into insignificance, and it is safe to say that the possible prevention of a large portion of the mortality from this disease is justly deserving of the solicitude, the active personal interest and liberal pecuniary support of all who have the real welfare of the people of this nation at their heart.

Any attempt to deal successfully with the problem of tuberculosis prevention must needs proceed along lines of a comprehensive statistical investigation, for the laws and tendencies of this disease are most intelligently expressed by statistical averages reduced to a uniform basis, readily susceptible of critical analysis. It is not necessary, however, nor perhaps advisable, in an address of this kind to make any extended use of statistics, for the concepts of the problem can be readily expressed in definite language, without superfluous ratios and percentages.

It is my purpose to deal briefly with the general facts of the tuberculosis problem, which, as far as I am able to judge, are necessary for a rational understanding of the methods and means best adapted to diminish the largely unnecessary mortality of this disease.

On the outset we are confronted with a fact which is generally ignored by those who would advance the cause of disease prevention by modern methods of ordinances and laws prohibiting spitting in public places, the segregation of tuberculosis patients, sanatoria treatment, etc., namely, the all-important truth that the *mortality from tuberculosis has progressively declined in American cities for more than half a century.* For illustration, in New York City the death rate from consumption per 10,000 of population was 42 during 1851-1860, against 39 during 1871-1880 and 27 during 1891-1900. In Boston the rate was 46 during 1851-1860, 41 during 1871-1880, and 26 during 1891-1900. For Baltimore we do not have the information previous to 1875, but we find that the rate decreased from 36 during 1876-1880 to 28 during 1886-1890, and to 21 during 1896-1900. (This includes the colored element.) The tendency toward a progressive decrease in the mortality from this disease from decade to decade during the past forty to sixty years has been practically the same in all of the principal American cities. In other words, the observed decrease in the mortality from tuberculosis antedates by many years the discovery of Professor Koch and the relatively recent view that the disease is of a highly infectious character and is transmitted from man to man.

It is necessary, then, for us to consider, first, the probable causes responsible for the decrease in the mortality from tuberculosis without direct social measures or conscious efforts to produce this result. It is always hazardous to advance views for which we have no definite statistical basis of observed experience, but from a careful study of the available facts brought out in our social and industrial history I have come to the general conclusion that *the decrease in the mortality from tuberculosis in past years,* or, let us say, previous to 1890, *must be ascribed primarily to a profound change for the better in the mode of life of the masses.* I would include in this term all the elements of social progress that can be determined or measured by the statistical method, and that can be confirmed by impartial medical and other investigations.

This general conclusion I find to include at least 10 distinct or special factors, any one of which and all of which in conjunction with each other would seem to me to have been of sufficient importance to produce the phenomenon of a decreasing mortality from tuberculosis without direct social or legislative measures.

First. We may attribute the decrease in the mortality from tuberculosis to vast and far-reaching improvements in the housing of the masses of the population in cities, of which formerly, say forty or fifty years ago, a large proportion lived in cellar dwellings, in houses located on damp and unwholesome subsoil, or on areas filled in with garbage and other health-destructive matter.

Second. There has been a vast improvement in the direction of providing tenements and dwellings with more light and better ventilation, and prohibiting entirely the use of dark interior and ill-ventilated rooms for living and sleeping purposes.

Third. The evils of overcrowding, while still considerable and often requiring drastic police interference, are, without question, less serious at the present time than formerly.

Fourth. Intemperance, while still an evil of great magnitude, is now less of a bodily destructive character than fifty, or even thirty, years ago. While the average consumption of liquor *per capita* may have remained the same (this being a fact difficult to determine), the statement cannot be called in question that the general mass of our people lead to-day more temperate lives and more free from the vice of gross intoxication than during the earlier years of our social history.

Fifth. There has been a considerable improvement in the feeding of infants and adults with food of more nutritious quality, making for the building of a body of a higher degree of disease resistance. We have substituted the ideal of a robust body and vigorous health, especially among women, for the anemic type of girls so common thirty years ago. This result is, in a large measure, due to the greater amount of outdoor life, and also to the public parks and children's playgrounds, which a more enlightened public opinion demands.

Sixth. Improved economic conditions, especially in the direction of higher wages and shorter hours of labor, substituting possibilities of rest and recreation in place of overstrain and overwork and bodily exhaustion common under earlier conditions of industrial life. What, for want of a better term, may be spoken of as the half-holiday, or vacation habit, is becoming a regular feature of life, even with the most humble laborer. Night labor, as far as possible, is gradually being done away with, resulting in a more healthy development of body and a higher degree of disease resistance.

Seventh. Child labor, formerly exceedingly common, is now practically prohibited and made impossible by law in most of the States. Constitutions which, under former conditions, would have been prematurely weakened and impaired are now permitted to reach a sufficient degree of maturity to more successfully withstand the inherent disease-producing conditions of factory life and other indoor occupations. It is a well-known fact that occupations such as the potteries, glass works and similar industries, in which children formerly commenced to labor at very early ages, are the occupations in which the after-lifetime is very considerably below the average and in which tuberculosis and respiratory diseases are of more than common occurrence.

Eighth. Unwholesome and unsanitary conditions of factory life, of serious effect on health and longevity; dust-producing occupations, especially destructive to lung tissue, and numerous other evil conditions surrounding men and women employed in ill-ventilated factories and workshops have been largely done away with in the light of modern sanitary science through factory and labor legislation. Anyone who has studied the diseases of occupation in this country and abroad will concede that these changes for the better in the conditions of factory life have been indeed profound and far-reaching in making for a healthier and a longer life.

Ninth. School life, or the conditions surrounding children at the impressionable age of the educational period, have been materially improved by slow degrees from the close, overheated schoolhouses of the past to properly-lighted, sufficiently-roomy and properly-ventilated schoolhouses of the present. Children exposed to the earlier conditions must, unquestionably, have had their health undermined and their disease resistance lowered as the result of hours spent under unsanitary and otherwise unsatisfactory conditions which, in the light of a better knowledge and understanding, are no longer permitted to exist. While much remains to be done to improve the hygienic conditions of school life, a vast amount of improvement in this direction has been made during the past fifty years.

Tenth. There remains the general social improvement of the mass of our population, making for a higher standard of life and a more deliberate view of life and the worth and value of living. There has never been a time when the commercial value of human life was so clearly recognized as it is at the present time, and the will to live and the will to live well was never before so strongly emphasized in the life of the people. All this, I am satisfied, must have contributed much toward the development of a type less likely to fall a victim to tuberculosis under modern conditions than under the less satisfactory conditions of the past.

We may now consider *the statistical laws* which underlie the occurrence of tuberculosis in modern life. Most of the conclusions which follow are derived from census reports on vital statistics, from the reports of local boards of health, the experience of life-insurance companies and special investigations which need not to be enumerated. As a general rule, the observations and conclusions are limited to the mortality from consumption, which forms approximately 96.5 per cent. of the total mortality from tubercular diseases. Unless otherwise stated, the rates used are 10,000 of population.

1. The mortality from consumption in the United States has decreased from 25 per 10,000 in 1890 to 19 in 1900. The fall in the death rate during the decade has been 24 per cent.

2. The mortality from consumption is greater in cities than in rural districts, but there are important exceptions to this rule, to which reference will be made later. The city death rate from consumption in 1900 was 20 per 10,000, against 13 for the rural districts.

3. The decrease in the mortality from consumption during the decade has been six per 10,000 for the cities, against not quite five for the rural districts. The social and material progress and changes, to which reference has been made in the introductory remarks, has, without question, been greater in the cities than in the country districts.

4. The mortality from consumption is greater among men than women; but here, again, we meet with important exceptions to a general rule. The death rate of males in 1900 was 19 per 10,000, against 16 for females.

5. The mortality from consumption among males in the cities was 21 per 10,000, against 16 for females—a difference in favor of females of five per 10,000 of population. In the country districts the death rate was 12 for males and 14 for females—a difference of two per 10,000 in favor of males. In other words, the mortality of males in cities is higher than the corresponding mortality of males in rural districts; also the mortality of females in cities is higher than the corresponding mortality of females in rural districts. These facts are deserving of careful consideration.

6. The decrease in the mortality during the decade 1890-1900 was five per 10,000 for males and six for females. This fact would seem to warrant the conclusion that, in a general way, the conditions making for a lower death rate from consumption have been more favorable to women than to men, and the tendency toward a lower death rate has been more pronounced in the case of women in cities than in rural districts.

7. The death rate from consumption is extremely high among the colored population, including in that term the Chinese and Indians, but primarily and almost exclusively the negro element. In 1900 the death rate of the white population was 17 per 10,000, against 49 for the colored element—a difference of 32 in favor of the white race. In other words, among the same number of population to every 100 deaths from consumption among the white population there were 288 deaths among the colored, indicating the most extraordinary continued predisposition to death from a particular disease of which we have record in the annals of hygiene and vital statistics.

8. The death rate of the colored population in cities was 50 per 10,000, against 19 for the whites. In the rural districts the death rate of the colored was 32, against 13 for the whites. If we reduce the rates to a common basis, we find that to every 100 deaths of the white population in country districts there were 246 deaths among the colored population. In other words, the higher mortality of the negro population from consumption and other tubercular diseases is, unquestionably, primarily the result of race.

9. During the decade 1890-1900 the decrease in the mortality from consumption was practically the same for both races, having been 5.65 per 10,000 for the whites and 5.55 for the colored. In the rural districts the decrease in the mortality of the white population was 4.6, and for the colored 4.3. In other words, as far as it is possible to judge, the decrease in the mortality from consumption has been largely the result of an improved environment affecting both races to practically the same extent. The wide variation in the mortality of the two races from this disease remains practically the same, and apparently unaffected by the more favorable conditions under which the present negro population lives.

10. The native white population of native stock—that is, those having both parents native born—experience a death rate from consumption considerably below the general average. In 1900 the rate was 13 per 10,000 for the native born of native stock, against 17 for the aggregate white population. The death rate decreased from 17 in 1890 to 13 in 1900. Accurate comparison cannot be made with the population largely or wholly of foreign extraction, except for a few nationalities which have been in this country for many years.

11. The foreign element in the United States in vital statistics is usually determined on the basis of the country of birth of the mother. This has been found the most satisfactory and accurate

method yet devised to ascertain the true relation of nativity to disease predisposition and mortality. Limiting our observations to ages fifteen to forty-four, we find that the death rate from consumption of those with mothers born in the United States was 16 per 10,000 living at this period of life, 15 for the English, 20 for Canadians, 21 for Germans, 23 for Scandinavians, 24 for Bohemians and 43 for the Irish. In other words, from the limited investigations which have been made into this branch of vital statistics, the Irish population in the United States experienced a death rate from consumption far in excess of the corresponding death rates of other nationalities. The rate, however, is far from being as high as the death rate of the colored population at this period of life, which was 59, compared with 43 for the Irish and 23 for the total white population.

12. The average age at death of persons dying from consumption is thirty-five years, but the true incidence of the mortality falls upon ages fifteen to thirty-five, when from 35 to 50 per cent. of the deaths from all causes are the result of tuberculosis. In other words, at ages fifteen to thirty-five from one-third to one-half of the entire mortality is the result of consumption and other tubercular diseases.

13. The death rate per 10,000 living at different periods of life was 4 at ages under fifteen, 25 at ages fifteen to forty-four, 23 at forty-five to sixty-four and 26 at sixty-five and over. In proportion to the number living, the mortality from consumption at ages over fifteen is about the same, speaking generally, throughout life. It is therefore of some importance for us to consider the indicated improvement in the mortality from this disease in its relation to age, for, other things equal, a subsequent decrease in the consumption mortality at ages fifteen to forty-four is of far greater importance to the nation than a similar decrease in the mortality from this disease at more advanced ages.

14. The mortality of males from consumption exceeds the mortality of females at all age periods by three per 10,000 at ages fifteen to forty-four, by twelve at forty-five to sixty-four and by six at ages sixty-five and over, or, speaking generally, the difference in the disease liability of the two sexes is most marked at ages forty-five to sixty-four, when the after-effects of factory and indoor life, as well as of intemperate habits, become more apparent.

15. This law, however, is subject to a very important exception. While the death rate of males is higher than the death rate of females, this is only true for the cities, for in the country districts,

at ages fifteen to forty-four, the death rate of men is sixteen, against twenty for women—a difference which we would ascribe to the after-effects of pregnancies, less properly taken care of in rural districts than in the cities, where proper medical attendance is more readily available and more generally taken advantage of.

16. The decrease during the decade in the mortality from consumption at the three age periods considered has been seven per 10,000 at fifteen to forty-four, nine at forty-five to sixty-four and eleven at sixty-five and over. In other words, the relative decline in the death rate has been most pronounced at the comparatively unimportant age period of sixty-five and over, while the decrease has been least at the age period when the commercial and economic value of human life is highest.

It would carry us too far to further extend this analysis by sexes and ages, with distinction of life in cities and rural districts, but we may point out that at each period of life the decrease in the mortality from consumption during the decade has been greater in the cities than in the rural districts.

17. Conjugal condition profoundly modifies the mortality from various causes, and much, if not most, from consumption. A critical analysis of the vital statistics by conjugal condition must needs take into account the elements of age and sex, but this would make a brief discussion impossible, while a lengthy discussion would be out of place. Males at ages fifteen to forty-four show the highest death rate from consumption among the widowers and among the single at ages forty-five and over. We would attribute this excessive mortality at ages fifteen to forty-four among widowers to the probable transmission of the disease from wife to husband, while at ages over forty-five we would attribute the excessive death rate of the single from tuberculosis to habits of life detrimental to longevity.

18. Among females the death rate from consumption is highest among widows at ages fifteen to forty-four, and among the single at ages forty-five and over, but the differences are not so pronounced as among males of different conjugal status.

19. Both sexes show the lowest death rate from consumption among married at practically all periods of life. The death rate of married women at ages forty-five to sixty-four from consumption is exceedingly low—only fifteen—compared with twenty-two for males of corresponding age.

20. Married women at the child-bearing period—fifteen to forty-four—experience a higher death rate from consumption than

married men, the rate being twenty-one for the former, against twenty-four for the latter. The difference is significant, but not very great. It is quite probable that these differences are greater in rural districts, but we have not the necessary data to confirm this view.

21. Widowers at all ages show an extremely high mortality from consumption when comparison is made with the mortality of widows of corresponding ages. At ages fifteen to forty-four the death rate of widowers was sixty-seven, against thirty-six for widows; at ages forty-five to sixty-four, widowers forty-nine, widows nineteen, and at ages sixty-five and over we find the rate to have been thirty-one for the former, against twenty-one for the latter.

22. We note further an anomaly in vital statistics and in marked contrast to the general laws of mortality, that the death rate from this disease among widowers is highest at the youngest ages, while lowest at the most advanced period of life (sixty-seven, forty-nine, thirty-one). This is highly significant, and would seem to warrant the conclusion that the higher mortality of widowers at early ages is the result of disease transmission from wife to husband. Conversely, there would seem to be a lesser liability in the transmission of the disease from husband to wife. The probable reasons for this cannot very well be discussed on this occasion.

23. Occupation has already been referred to as an element making for a high death rate from consumption among males at certain ages and under certain well-defined conditions, especially of city life. We are confronted, however, with the difficulty of briefly discussing this aspect of the problem on account of the necessity of a critical analysis by age periods and length of trade life. The subject-matter is complicated by the fact that the census reports do not show the mortality of males in specified occupations from specified diseases by specified periods of life. Since the age distribution of persons in different employments varies widely, it would be misleading to compare crude death rates except with the greatest possible caution in selected industries, where the elements are, as far as known, comparable.

Males in all occupations, according to the census, experience a mortality from consumption of twenty-four per 10,000. In the professional occupations, where the average age of the living is quite high, the relative mortality is correspondingly low, being twelve for clergymen, fourteen for lawyers and seventeen for physicians. It, however, is safe to say, from a study of other data, that the mortality from this disease among men in professional occupations is, in fact, exceedingly favorable. Persons in the mercantile and trading class experience an average death rate of seventeen per 10,000, hotel keepers and boarding-house keepers a rate of twenty-one, saloon and restaurant keepers a rate of twenty-nine, barbers and hair dressers a rate of thirty-three, laborers a rate of thirty-seven, book-keepers a rate of forty, servants a rate of forty-three, printers a rate of forty-four, cigar makers a rate of forty-eight and stone cutters a rate of fifty-four. These remarkable differences in the death rate from consumption among men in different employments are extremely suggestive and deserving of the most careful consideration, for, in the writer's opinion, there can be no more effective measures tending to the stamping out of the disease than active efforts in the field of the diseases of occupation and a propaganda against the still considerable unhygienic conditions of factory life. The high death rate of servants, which is confirmed by corresponding data for female domestics, is also highly significant.

(To meet the possible criticism of the use of these data, which ignore the age factor, I have carefully examined into the more scientific reports on the vital statistics of England and Wales. If we take, for illustration, the age period twenty-five to thirty-four, we find that the death rate of clergymen from consumption was sixteen per 10,000, seventeen for physicians, nineteen for lawyers, twenty-three for artists and forty for musicians. Among men in commercial and agricultural employments the death rate was seventeen for agriculturists, twenty-two for grocers, twenty-seven for manufacturing chemists, twenty-eight for druggists and forty-one for general shopkeepers. For persons in general trades and industries the death rates were forty-nine for tobacconists and cigar makers, forty-eight for book-binders, forty-eight for barbers and forty for shoemakers. Among persons in recognized unhealthy occupations the death rate was sixty among hotel and inn servants, fifty-one among glass workers, fifty among printers, forty-seven among carpet and rug manufacturers, forty-three among zinc workers, forty-two among copper workers, forty-one among dyers, forty-one among saloon keepers and thirty-nine among brass workers. Among persons in recognized dangerous and unhealthy occupations the rate was forty-three among lead miners, thirty-four among tin miners, thirty-one among copper miners and twenty-eight among coal heavers. Among common laborers, servants, etc., the rates were seventy among costermongers and hawkers, forty-four among messengers and porters, thirty-four among general laborers and twenty-three among domestic servants. Among men in all occupations at the age period of twenty-five to thirty-four the death rate from this disease is twenty-six per 10,000, which compares with thirty-four for persons in recognized unhealthy occupations, twenty-seven for persons in general trades and industries, twenty-one for persons in professional occupations and thirty-two for common laborers and servants.)

24. The season of the year, as far as it is possible to judge, affects the mortality from consumption only to a limited extent. The mortality in the United States is highest during March, April and May, and lowest during August, September, October and November. The month of highest mortality during the census year 1900 was March, with a monthly death rate of 1.8 per 10,000 of population, and the lowest were June and September, with monthly death rates of 1.3. The information is not yet sufficient to warrant final conclusions.

25. The mortality from tuberculosis varies widely in different localities, but we question seriously whether these differences are the result of climate rather than of material variations in the age, sex, race, nativity and occupation distribution of the population. The registration area of the United States, unfortunately, does not include a sufficient number of representative States, but, limiting our observations to New England, New York and New Jersey, we do not find the evidence conclusive that local variations in the death rate have been the result of variations in climate. As far as it is possible to judge, the variations appear to be rather the result of occupation, etc., than of climate.

25a. (In illustration of this point, I may add a summary comparison of the mortality from consumption in certain American cities during the five years 1896-1900. The rates are per 10,000 of population and are as follows: Cities with high death rates: San Francisco, twenty-nine; Orange, N. J., twenty-seven; New York, twenty-six; Newark, N. J., twenty-six; Pueblo, Colo., twenty-six; Jersey City, N. J., twenty-five; Boston, twenty-four; Brooklyn, twenty-two; Cambridge, Mass., twenty-two; Paterson, N. J., twenty-two; Providence, R. I., twenty-two; Holyoke, Mass., twenty-one; Worcester, Mass., twenty-one; Cincinnati, twenty-one; Philadelphia, twenty-one; Lowell, Mass., twenty-one.

Cities with low death rates from consumption: Passaic, N. J., seventeen; Manchester, N. H., seventeen; Binghamton, N. Y., seventeen; New Bedford, Mass., sixteen; Fall River, sixteen; Chicago, fifteen; Lynn, Mass., fourteen; Gloucester, fourteen; St. Paul, fourteen; Milwaukee, thirteen; Minneapolis, twelve; Spokane, twelve.

In Southern cities the mortality from consumption is, as a rule, very low among the white population: New Orleans, twenty-two; Washington, D. C., nineteen; Memphis, seventeen; Augusta, Ga., sixteen; Nashville, Tenn., sixteen; Atlanta, sixteen; Richmond, Va., fourteen, and Charleston, S. C., fourteen. These comparative statements are extremely interesting and valuable in that they *localize* the mortality from consumption with sufficient accuracy to point out where active efforts to suppress the disease are needed most. It is a matter of regret that I have not the data for Baltimore, since the health reports do not contain the separate tabulation of the deaths by race.

26. The census data are not published in sufficient detail to permit of a rearrangement of the mortality by geographical sections of the country according to latitude, longitude and altitude, or with special reference to certain topographic features, such as location of cities on lakes, in river valleys, at high altitudes, etc. My inquiries into the possible relation of these conditions to the distribution of consumption are as yet in a very unsatisfactory state, and no definite conclusions can be advanced. There are other factors which have to be taken into account, as, for illustration, the attraction of a large number of tuberculosis patients to cities like Denver, Los Angeles, San Antonio, etc., which would tend to produce a high local death rate from this cause when, as a matter of fact, the climatic conditions are in all probability exceedingly favorable to a cure, if not a certain prevention of the disease.

27. A study of the relation of consumption to the elements of climate, which has almost a literature of its own, confirms the view that certain climatic elements unquestionably favor the development of the disease, while others materially hinder it. The writer has not made a sufficiently extensive study of these elements to warrant him in advancing definite conclusions.

28. The relation of the mortality from consumption to surface geology, soil and topography has never been exhaustively investigated, or at least not reported upon in such a manner that the results can be utilized in this summary of the general elements of the mortality of this disease. It is, however, a generally accepted theory, and an apparently well-proven fact, that the mortality from

consumption is highest in localities with a damp soil or a clayey subsoil, making natural drainage difficult, if not impossible. The vital statistics of Baltimore have been investigated with this end in view, but the results as published by Dr. Billings are not conclusive. It, however, is reasonably safe to say that the death rate decreases with increasing altitude, and that the death rate decreases with increasing dryness of the atmosphere.

29. The relation of the mortality from consumption to class of dwellings, tenements and institutions, such as prisons, asylums, convents, etc., has been investigated to a reasonably sufficient extent, and the conclusions would seem warranted that overcrowding is in a large measure responsible for the development of the spread of the disease, and the mortality in such institutions, in the absence of rational sanitary precautions, is, as a general rule, excessive.

30. The relation of the mortality from consumption to social and economic conditions, especially to wealth and poverty, habits, such as alcoholism, etc., has been sufficiently inquired into to warrant the conclusion that consumption is much more common among the poor than among the rich, and this may be attributed to imperfect or unsatisfactory diet. The mortality from consumption is also known to be more excessive among persons of intemperate habits, and this is proven by the high death rate of saloon keepers and bartenders from tubercular diseases.

31. The relation of the mortality from consumption to religious confession has been investigated, especially by Korosi, Dr. Billings and Dr. Fishberg, and the conclusion would seem warranted that the mortality from this disease is extremely low among persons of the Jewish faith. Whether this is the result of the dietary laws of the Hebrews has not yet been sufficiently established. It, however, is reasonably proper to assume that some such a relation exists. The Jews, however, are justly praised for their high order of domestic life, which, as elsewhere pointed out, has a direct relation to the mortality from tuberculosis.

32. The relation of the mortality from consumption to personal physical condition as determined by anthropometry, especially in the interrelations of height, weight, chest expansion, respiration, temperature, pulse rate, etc., have not been sufficiently investigated to warrant entirely safe conclusions, but this much may be affirmed, that persons predisposed to consumption are almost invariably persons of inferior physical development, with evidence of imperfect nutrition, resulting in a body weight about ten pounds below

the average. This is a field which is fully deserving of some careful inquiry and consideration, for so far the contributions have been very fragmentary and of only limited value.

33. The earlier belief in the possible heredity of consumption of the child from the parent, or from collateral branches of the family, is one which, in the light of modern research, may be reasonably assumed to have been overestimated, except in so far that there can be no question but that a physical constitution predisposing to tuberculosis is often, and perhaps frequently, transmitted from parent to child. On this phase of the problem we have also need of additional data covering a large area of observation to eliminate the possibility of erroneous interpretation of the facts.

34. The duration of the disease from the time of infection to the time of death is usually given as two years or thereabouts, but on this point statistical information is required which would certainly be of great value. No definite law at the present time is known to me which would warrant final conclusions regarding this point.

35. Relative to the organs affected by tuberculosis, I have already pointed out that of the normal mortality about 96.5 per cent. is represented by consumption of the lungs. It would be desirable, however, to have a comprehensive study made of this aspect of the problem.

36. The result of treatment in hospitals and sanatoria, with strict regard to the duration of the disease and the race, sex and occupation of the patient, have not as yet been determined with sufficient accuracy, but for a few institutions we have quite trustworthy data which are certain to be of great value in the future. The earlier experience has been materially modified in late years, and it is probably safe to say that three months is the lowest limit of effective sanatoria treatment. It may not be out of place for me to refer to the admirable statistics published annually in the reports of the Johns Hopkins Hospital, in a measure the most useful and practical which are available for any hospital in this country.

CONCLUSIONS.

My object in presenting for your consideration the general statistical laws of tuberculosis is to emphasize the need of a broad basis of sound knowledge for any far-reaching sanitary or other measures which may be adopted for the purpose of diminishing by associated effort the largely preventable amount of disease and mortality from tuberculosis. The facts would seem to warrant the view that it is possible to so localize the mortality from tuberculosis that an energetic campaign against consumption is practically certain to produce far-reaching results. If we determine upon a campaign against consumption as we find it to occur among persons in certain recognized unhealthy employments, or living in certain recognized unhealthy localities, or under certain ill-health-producing conditions, there is no doubt in my mind but that within a few years a marked diminution in the death rate will result from such well-directed and intelligent efforts. By *preventing* the disease in the first place, it will not be found necessary to erect immense and costly institutions for the *cure* of the disease. I am certain, from a careful study of the facts in the case, that such efforts should be primarily directed against unsanitary workshops, ill-health-producing occupations and the employment of physically unfit types of men in industries in which the death rate from consumption is extremely high. By adopting intelligent measures in clear recognition of the laws which determine a high or low mortality from this disease I am sure that a large portion of the present mortality from this disease will be done away with.

TABLE I.—MORTALITY FROM CONSUMPTION, 1871-1900.

(Rates per 10,000 of Population.)

		Southern cities.	
Years.	Northern cities.	White.	Colored.
1871	32.49	27.94	44.60
1872	33.33	25.90	56.28
1873	31.48	33.22	64.46
1874	30.40	27.89	58.24
1875	30.99	29.94	55.56
1876	31.26	31.50	60.56
1877	29.38	28.16	60.34
1878	29.75	30.39	64.63
1879	29.08	29.98	61.80
1880	30.05	30.76	65.61
1881	32.56	29.91	64.49
1892	31.57	29.79	64.84
1883	30.99	28.37	63.14
1884	29.85	28.11	63.66
1885	28.76	29.14	62.96
1886	28.55	26.42	61.68
1887	27.91	24.28	54.58
1888	26.36	23.05	51.92

		Southern cities.	
Years.	Northern cities.	White.	Colored.
1889	24.74	22.02	51.24
1890	25.90	23.20	51.47
1891	24.02	21.95	50.94
1892	23.68	21.25	51.53
1893	23.12	21.39	48.98
1894	21.78	20.29	49.35
1895	21.95	19.44	48.61
1896	20.86	19.14	49.98
1897	19.97	18.43	46.53
1898	19.89	18.29	43.54
1899	20.13	17.78	43.68
1900	19.16	18.28	44.53
1871-1875	31.66	30.55	57.84
1876-1880	29.88	30.06	62.84
1881-1885	30.67	29.02	63.79
1886-1890	26.61	23.92	53.98
1891-1895	22.88	21.00	49.97
1896-1900	19.98	18.32	45.59
1871-1880	30.65	30.14	61.92
1881-1890	28.42	26.75	58.70
1891-1900	21.33	19.68	47.76
1871-1900	25.48	24.24	53.84

TABLE II.—MORTALITY FROM CONSUMPTION IN FOUR AMERICAN CITIES.

(Rates per 10,000 of Population.)

Years.	New York City.	Boston.	Philadelphia.
1851-1860	42.2	46.3	...
1861-1870	38.9	40.7	32.1
1871-1880	39.3	39.9	31.7
1881-1890	37.7	38.0	29.0
1891-1900	26.7	26.2	22.1

	Baltimore. (White and colored.)
1876-1880	36.3
1881-1885	33.8
1886-1890	28.3
1891-1895	24.3
1896-1900	21.3

(Above data compiled from official health reports, supplemented by correspondence with health departments.)

TABLE III.—MORTALITY FROM CONSUMPTION BY RACE.

(Rates per 10,000 of Population.)

Registration Area (Total).

Years.	Aggregate population.	White population.	Colored population.
1890	24.5	23.0	54.6
1900	18.7	17.4	49.1

Registration Area (Cities).

Years.	Aggregate population.	White population.	Colored population.
1890	26.6	24.7	56.3
1900	20.5	18.8	50.4

Registration Area (Rural).

Years.	Aggregate population.	White population.	Colored population.
1890	18.1	17.8	36.5
1900	13.4	13.2	32.3

(Compiled from United States Census of 1900, Vital Statistics, Part I, p. clxxvi.)

TABLE IV.—MORTALITY FROM CONSUMPTION BY RACE AND SEX.

(Rates per 10,000 of Population.)

Registration Area (Total).

	White.		Colored.	
Years.	Males.	Females.	Males.	Females.
1890	24.0	22.0	57.8	51.5
1900	18.8	15.9	52.7	45.5

Registration Area (Cities).

	White.		Colored.	
Years.	Males.	Females.	Males.	Females.
1890	26.5	23.0	60.0	52.8
1900	21.2	15.5	54.7	46.4

Registration Area (Rural).

	White.		Colored.	
Years.	Males.	Females.	Males.	Females.
1890	16.5	19.1	36.4	36.6
1900	12.2	14.1	30.2	34.5

(Compiled from United States Census of 1900, Vital Statistics, Part I, p. clxxvi. Part I, p. clxxvii.)

TABLE V.—MORTALITY FROM CONSUMPTION IN THE REGISTRATION AREA—UNITED STATES.

DEATH RATES BY AGE, COLOR AND BIRTHPLACES OF MOTHERS.

(Rates per 10,000 of Population.)

Color and Birthplaces of Mothers.	Ages. Under 15.	Ages. 15-44.	Ages. 45-64.	Ages. 65—over
White	3.2	23.5	22.1	25.2
Colored	24.6	58.7	51.8	54.9
Mothers born in—				
United States	2.8	16.3	13.2	17.6
Ireland	4.2	42.8	34.1	32.5
Germany	2.7	20.6	20.8	23.5
England and Wales	2.7	15.1	17.3	23.4
Canada	3.5	20.0	16.4	23.7
Scandinavia	3.2	23.4	26.7	23.7
Scotland	3.3	20.1	20.2	23.9
Italy	5.1	15.0	15.7	14.5
France	4.7	22.1	20.0	16.3
Hungary	3.9	11.3	12.5	18.7
Bohemia	1.3	23.5	12.5	10.1
Russia	2.7	13.1	17.3	24.9
Poland	1.1	6.7	10.4	24.3
Other foreign countries	4.6	18.9	26.4	23.4

(Compiled from United States Census of 1900, Vital Statistics, Part I, p. clxxviii.)

HOUSE INFECTION OF TUBERCULOSIS.

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THE kaleidoscopic phenomena of this earth as we see them around us are the result of a continuous alternation of life and death. In this beautiful panorama death is as necessary as life. Something is always dying that something else may live. Inorganic matter continuously is being changed into organic matter and organic into inorganic. For changing organic matter into inorganic matter God has created the micro-organic world.

A micro-organism which, perhaps, has slipped away from its natural place in organic nature, and in consequence has done much damage to man, is the tubercle bacillus. In the great division of organic matter it generally is credited to the vegetable kingdom. In a classification of micro-organisms it is technically known as a facultative saprophite. By this is meant that ordinarily it gets its living as a parasite on some higher organism, but that it may subsist on dead organic matter as a saprophite. In a subclassification of micro-organisms it is known as a facultative anaërobic parasite. By this is meant that ordinarily it grows in a tissue from which air is excluded, but that it may grow in some substances, under certain conditions, in the presence of air.

When the tubercle bacillus grows in the tissue of a human being or of an animal it gives rise to a condition which has forcibly arrested the attention of man because of the suffering, sorrow, and misery which accompany it and follow in its wake. In the early history of medicine this condition was named phthisis and consumption. In more recent times it has been divided into two epochs, the earlier being called tuberculosis and the later consumption. In earlier times, too, the condition was viewed by mankind generally as a providential visitation, the punishment for sin, touching not only the immediate offender, but reaching the offspring to the third and fourth generation. Science has demonstrated that it is a mere episode in nature subject to natural laws and absolutely under the control of man's will.

Man is interested in tuberculosis because it is a disease. The same processes and phenomena in other fields of nature give pleasure to man, but here they give discomfort, and are followed by sorrow and misery, because man himself is the field of operation. The word disease means want of ease. Quite naturally, man has given much thought to how to avoid getting tuberculosis and how to get rid of it when it afflicts him. By reason of his superior intelligence man has always been able to control his organic foes so far as visible objects are concerned, but in his fight against the micro-organic world he is confronted with a much more serious problem. Much has been done, however, to throw light upon this newly-discovered enemy, and already it is demonstrated that man need no longer get tuberculosis, and that if he is so unfortunate as to get it, he need not die of it. Unfortunately, the knowledge which makes this new dispensation possible is still in the hands of a few.

All diseases which are caused by micro-organisms are communicable. This is a self-evident proposition. Whatever is living can only come from a parent, and phenomena which are due to the growth and development of living organisms cannot arise except by reason of the growth and development of those organisms. There is a difference, however, in the manner in which parasitic micro-organisms are conveyed from one person to another. Some are conveyed through the instrumentality of insects, some by means of water, and others by contact, direct or indirect. Some parasites have two kinds of hosts, a major and a minor host; some can reproduce themselves outside of a host, and others always remain dormant when out of the host. Parasites which have two hosts and parasites which can reproduce themselves outside of a host may be conveyed from one person to another over long distances, whilst parasites which are conveyed by contact can only be conveyed within a limited, circumscribed environment. The yellow-fever parasite, for instance, is conveyed through the mosquito, the typhoid-fever parasite by water, and the tubercle bacillus by contact.

All diseases which are conveyed by contact are termed contagious. Contagious diseases are not necessarily alike, however. There is a great difference in the intensity of contagion. The acute contagious diseases are much more intensely contagious than the chronic contagious diseases. In principle the contagion of all is the same, but in practice the method differs widely. Smallpox, measles and scarlet fever, for instance, are contagious in exactly the same sense as tuberculosis, so far as the principle is concerned —that is, they are conveyed by contact—but the intensity of the contagion is so much greater with them than with tuberculosis that practical measures for the prevention of the former would in no sense apply to the latter. Smallpox, measles and scarlet fever affect the whole body, and contagion is rapidly given off from the entire body. Tuberculosis is a local disease, and contagion is given off from one or two points only. In smallpox, measles and scarlet fever the matter which carries the micro-organisms may be invisible; in tuberculosis it always is gross and easily seen. In smallpox, measles and scarlet fever places and things soon become intensely contaminated; in tuberculosis it takes a long time to produce such a result. Intimate association, therefore, with a person suffering from smallpox, measles and scarlet fever without contracting the disease is impossible, unless the person thus exposed has an immunity from vaccination or previous attack, whilst intimate association with a consumptive without contracting the disease is quite feasible.

The contagion of tuberculosis, indeed, is of a kind by itself. It differs somewhat from the contagion of every other disease of which we have knowledge. It is so unique that writers have had some difficulty in finding an epithet descriptive of it. This is the reason why many writers object to calling tuberculosis contagious. Some would have us call it communicable, but this term is too generic. Others have suggested the epithet infectious for it, and this does not fit at all, because it has a specific meaning which only applies to such diseases as malaria and yellow fever.

The most striking feature about the communicability of tuberculosis is that it depends almost entirely upon the house. An inclosure of some kind is so necessary for the conveyance of the disease from one person to another that contagion is impracticable without it. It is therefore with good reason that we use the phrase house infection of tuberculosis when we speak of the practical manner in which the disease is spread in a community. The word infection, of course, is used in the broad sense of conveyance, and the word house in the broad sense of an inclosure. The phrase tells pretty nearly the whole story of the communicability of tuberculosis, and covers the entire proceeding from the beginning to the end—garnering the seed, preparing the soil, implantation, rearing the tender plant, nurturing the full-grown shoot, maturing and harvesting.

The house is the granary of the tubercle bacillus outside of its host. Were it not for the house the tubercle bacillus would soon have to perish from the face of the earth. It could not be preserved. Sunlight, air and water are its natural enemies. The water dissolves it out of its cache, and the sunlight and air destroy it. How long tubercular matter may remain vital in the open air has not been definitely determined, but all agree that the time is very short. Even when the bacilli in such matter are not killed they are weakened so that they will not readily take root when planted. In the house, on the contrary, tubercular matter may remain vital for a long time, because it becomes dry and the broken-down tissue serves as a cache for the bacilli. Even when the matter becomes finely pulverized so that the bacilli no longer have so much protection, it remains vital for a long time, because the sun and air cannot get to it.

Ordinarily the tubercle bacillus is dependent upon other microorganisms for its exit from its host. These are the streptococcus and the staphylicoccus. They are pus-producing organisms, and are very adept at destroying tissue. When they join forces with the tubercle bacillus they kill and soften the tissue which has been invaded by the tubercle bacillus, and then Nature casts it out. A double purpose is served in this way, the tubercle bacillus is helped out of its host and is given a protective covering towards preservation while out of the host. The broken-down tissue which is thrown out forms the protective covering.

In the transition of the tubercle bacillus from one host to another we have a beautiful illustration of Nature's jealous care of every form of life. The tubercle bacillus is a motionless, helpless micro-organism, which can grow and reproduce itself only under certain conditions in a definite soil, and which requires during the interim between its exit from one host and its entrance into another special protection, and for admission into a new host special opportunities. These are secured for it indirectly through its toxin and the toxins of its associates. By sensations set up in the nervous system it lures its victim into the very place where exist the best conditions for the preservation of its species and the best opportunities of finding a new host. Consumption is the autumn of tuberculosis, the blossom grown into ripe fruit. When it comes on the victim, by reason of his chilliness, malaise, and general feeling of helplessness, seeks shelter in some inclosure, and is deluded with the idea that the farther he can get away from sunshine and fresh air the better are his chances of recovery. The house thus becomes the harvest field of the ripe tubercle bacillus, and the seed quite naturally falls into the very place which by Nature is intended for its granary.

The house also prepares soil for the tubercle bacillus. We have every reason to believe that the bacillus cannot get a foothold in perfectly healthy, normal tissue. It is quite likely, indeed, that primordially the tubercle bacillus was a saprophite only, and that its function in the world was to change dead organic matter into inorganic matter. It is easy to conceive how gradually it may have evolved into a parasite by growing on tissue which, while not dead, was much debased. At any rate, even at the present time it does not seem to be able to invade tissue until the tissue has been injured in some way, either by malnutrition, by traumatism, or through the agency of some other micro-organism. Malnutrition is one of the most common predisposing causes of tuberculosis.

The physical life of man and animals is a chemical process. There is a combination of certain elements through the instrumentality of a living cell with evolvement of beings endowed with life. Food, air and water are the substances used in the process. In proportion as these substances are at hand in proper quantities the being evolved is a healthy one, and in proportion as any of the substances are deficient or defective the being is an unhealthy one. Of the three substances required in this chemical process air is, perhaps, the most important, and certainly the most necessary. Life may be maintained for some days without food and water, but for a few minutes only without air. The same is true of health. A person may keep fair health on a stinted supply of food and water for a long time, but soon succumbs to a stinted supply of air. This probably is due to the fact that air plays a double *rôle* in health. It not only carries in oxygen for chemical purposes, but it carries out poisonous products of chemical action. It is believed by some that rebreathed air produces soil for the tubercle bacillus more through the poisonous products of combustion which are disseminated in the air than by reason of deficiency of oxygen. Probably it does it by both. At any rate, housed human beings and animals are very prone to tuberculosis. Deficiency of oxygen certainly leads to malnutrition. Too much food and too little air not only lead to defective metabolism, but throw upon the organs of the body poisonous products which must be gotten rid of to the detriment of the whole system.

Implantation of the tubercle bacillus is greatly facilitated by the house. For implantation prolonged intimate contact with a person, place, or thing which has been intensely contaminated with tubercular matter is necessary. The mere presence of a few tubercular bacilli is not sufficient. Everybody has some resisting power to tuberculosis, and with everyone there is a minimal dose of tubercle bacilli which will give an implantation. No doubt this dose differs with different people, but resisting power of some kind exists to some extent in everyone. Even in inoculation experiments on animals a minimal dose has been found below which injections prove negative. This minimal dose in a sense measures the individual's fighting capacity against the disease. So long as the minimal dose is not reached an implantation cannot take place. Frequent warfare against a dose below the minimal dose increases the resisting power of an individual and raises the minimal dose. With animals the minimal dose which can give an implantation gradually can be increased until almost complete immunity has been established. Experiments upon animals have been made by inoculation. It is quite probable that by the natural mode of entrance of the tubercle bacillus into the system the minimal dose is larger than by inoculation. The natural mode of entrance is by the alimentary canal or the respiratory tract. At both of these ports of entry there is strong opposition to admission. The gastric juice has some germicidal powers, and all along the respiratory tract there are devices for keeping out micro-organisms. Beyond the ports of entry lie the lymphatics and lymphatic glands, and beyond these the phagocytic bodies of the blood, all of which wage war against micro-organisms that may pass the ports of entry. From what has been done experimentally on animals and from what we have been able to observe clinically on man we have good reason to believe that the minimal dose of tubercle bacilli necessary for an implantation by the natural mode of entrance is quite large. This is not a mere speculation either. Out of every five people who are intimately exposed to the contagion of tuberculosis for a long period of time under the most favorable conditions for an implantation only one person develops the disease. This shows that implantation is exceedingly difficult even under most favorable circumstances.

An inclosure is the one place in which contamination with tubercular matter can become sufficiently intense to create an environment capable of overcoming the resisting power of man and producing an implantation. It is only in an inclosure that vital tubercular matter can accumulate. In the open air, water, sunlight and air devitalize it nearly as rapidly as it is given off. Tubercular matter ejected in a house, unless immediately devitalized, artificially dries and is distributed about in particles varying in size from big chunks to impalpable dust. In these particles the bacilli are cached and preserved. Gradually all the particles are reduced to dust, either by trituration, oxidation, or the action of saprophites. This tubercle-laden dust settles on the walls, on furniture, and on everything in the inclosure. In the course of time there is quite an accumulation of vital tubercular matter in such a place, and every time the air is disturbed tubercle-laden dust is set in motion. Here, then, finally is an environment capable of giving an implantation of tuberculosis. Occupancy of such a room means constant inhalation and frequent deglutition of tubercular matter. Tubercle bacilli continuously find their way into the system, and it is only a question of time when more have gained entrance than can be successfully withstood by the guards and disease-fighters of the body. The result is implantation of tuberculosis.

The kind of inclosure which offers the best environment for the implantation of the tubercle bacillus is, first, the home, and second, the workshop. The home is of all places most prolific of new implantations of tuberculosis. It was on this account that in bygone days tuberculosis earned for itself the reputation of being an inherited disease. Tuberculosis is a family disease. It can most easily be implanted around the hearthstone. It follows the family tree in its distribution, and when it once gets into a family it follows that family in all directions until it either has exterminated the family or exhausted the soil, and has made what is left of the family immune. The part of the home in which implantations most frequently take place is the bedroom, and next to the bedroom the dining-room. The bedroom usually is the place where the victim of tuberculosis spends his last weeks or months—a period during which the disease is most intensely contagious. Among the very poor the dining-room often is used as a bunking-place for the stricken one until a day or two before death. Under such circumstances the dining-room becomes very much contaminated and becomes a prolific source of new implantation.

The workshop is a very common means of spreading tuberculosis. By workshop, of course, is meant any inclosure in which one or more people are employed. Tuberculosis is an extremely chronic disease, and usually runs a long course even in its contagious stage before its victim is incapacitated for his usual occupation. Some people work with the contagious stage of tuberculosis for the greater part of a working lifetime, occasionally being thrown out of employment for a few weeks or months on account of an exacerbation, and again returning with as much vigor as before. Unfortunately, habits of men and women in the matter of spitting make it easy for a consumptive to contaminate his immediate environment in a shop, if not the entire shop. One consumptive, perhaps, cannot contaminate a large shop so as to produce an infectious environment of the entire shop, but he can produce an environment around his own stand capable of implanting the disease in one or more of those next to him, and before long he has associates in the task of polluting the shop. In a workshop in which a case of tuberculosis exists careful investigation will reveal the presence of other cases in various stages of the disease. Deaths will occur from such a shop at regular intervals for an indefinite period so long as the shop is permitted to remain contaminated.

Inclosures such as hotels, churches, public halls, places of amusement, and public conveyances, in which people stop for a short time only, are not apt to give rise to many implantations of tuberculosis for two reasons. First, because a consumptive rarely remains in them long enough to produce a contagious environment capable of giving an implantation, and secondly, because healthy people seldom remain in them long enough to get an implantation. There is some danger of contracting the disease in such places for people who are employed in them in the capacity of cleaners and caretakers, but for the casual visitor practically there is no danger.

Things which have been intensely contaminated by having been used for a long time by a consumptive may give the disease to others when kept or used indoors. In the open air they may be harmless, unless worn upon the person. Contaminated furniture, carpet, and hangings of various kinds, when taken into a perfectly sterile house, may themselves contaminate the house sufficiently to create an environment capable of implanting the disease. The tubercular matter adhering to such articles is distributed about and settles on walls and floors. In the open air, on the other hand, tubercle-laden dust from such articles is apt to be scattered about over such a wide area as to make it impracticable for any one person to get enough of it to give rise to an implantation.

The house nurtures the tubercular growth when an implantation has taken place. Mere implantation of the tubercle bacillus does not necessarily mean a development of a full-fledged tuberculosis. The disease always begins in a very small way, and then attracts practically no attention. The first crop develops and runs through its course, and a second follows perhaps a little larger than the first. This is followed by a third and fourth, each a little larger than the preceding one, and thereafter another larger still, until finally so much tissue has been invaded and destroyed as to make death inevitable. At any time during the progress of the disease prior to the destruction of tissue essential to normal functions of the body the economy has within itself the power of throwing off the disease. Autopsies prove that this often is accomplished by Nature unaided by medicine. It probably would be accomplished in all cases were it not for the house.

In the beginning of the tubercular process the tendency to recovery is so great that the slightest aid to Nature may turn the tide toward recovery. The process by which recovery takes place probably is healthy metabolism—that is, a perfect change of food into tissue. Implantation has taken place because the individual temporarily has been a little below par as a result of improper food, insufficient air, overwork, dissipation, an attack of some other disease, or some such matter, one or all. Under proper conditions the implantation is rooted up before it can grow into tuberculosis. All that may be needed is a little rest, a little extra food, and a little more fresh air. In some cases recovery might take place if a little rest could be had, even without extra food and air; in others if better food could be had, even though no rest could be taken and the air supply could not be changed. But in all recovery would almost surely follow a life in the open air, in spite of bad food supply and overwork. Life in the open air enables one to digest coarser food and to do more work without fatigue than is possible indoors. This is probably due to the fact that in the open air the poisonous products of combustion are promptly removed from the system, and thus are prevented from embarrassing the entire organization. To cure tuberculosis we must have perfect metabolism, and this we only can have when enough fresh air is taken into the system night and day to oxidize the food and cleanse the blood. Imperfect metabolism predisposes to tuberculosis by debasing the tissues and making soil for the tubercle bacillus.

House life undoubtedly plays an important *rôle* throughout the entire course of tuberculosis to its culmination in consumption and death. With every recurring crop of tubercle the organs of the body become more embarrassed, and the economy is less able to carry on the warfare against the disease. When the disease is in the lungs, as it frequently is, the air supply grows less with each destruction of lung tissue. Fortunately, Nature has given all air-breathing creatures ample lung capacity, enough and to spare, so that a great deal of lung tissue may be destroyed without interfering with the functions of the body, provided the air supply is right. Under these circumstances other organs, no doubt, supplement the lungs in their functions of elimination. Everything hinges upon an ample supply of fresh air, however. When this is at hand healthy metabolism may be maintained even when the disease is advanced, and through this health may again be reached. Tuberculosis makes its progess because its victim is shut up in a house where he cannot get fresh air. Unfortunately for the poor, an ample supply of fresh air is impossible. Their homes, as well as their workshops, have been constructed on a mistaken idea that whatever shuts out air, heat and cold is conducive to health. The large death rate from consumption really must be ascribed in a great measure to bad ventilation in home and workshop.

The last scene of conflict in tuberculosis between the victim and his foe is the house. Tuberculosis develops into consumption because of the house. This does not mean that people could not get tuberculosis if they lived out of doors, for birds of the air and animals of the field get the disease. Tuberculosis, however, in itself would seldom prove fatal. Both animals and human beings may go through life with tuberculosis and reach old age without being seriously inconvenienced by it. Lots of animals and people do. Dr. Trudeau has shown by experiments on animals that life in the open air greatly retards the development of tuberculosis and promotes recovery. Rabbits which he inoculated and penned up died, whilst rabbits which he inoculated and permitted to run at large maintained good health, although they developed tuberculosis. In sanitoria where consumptives are made to live out of doors wonderful improvement sets in, even when the case is incurable. Frequently all the symptoms of consumption disappear, and the patient becomes comfortable even when so much tissue has been destroyed that recovery is physically impossible. In other words, even consumption in the open air loses all its most serious symptoms. The house makes and maintains consumption, and consumption kills.

Consumption may well be termed a house disease. Without the house it cannot exist. It depends upon the house for its implantation, propagation, and for evolution of all its phenomena. The house is the place where the tubercle bacillus lies dormant in wait for its host; it is the place where the new host gets his implantation; it is the place where the tubercular subject gradually becomes a consumptive, and it is the place where the consumptive dies.

In studying the progress of civilization in the light of modern science one is struck with the egregious blunders into which man has been led by his desire for privacy and comfort. He has built his house to keep out his enemies, to protect himself from heat and cold, and to screen himself from the curiosity of his neighbor. He has sought to make his home his castle, but in reality he has made it the place wherein he courts death.

If man desires to free himself from the great white plague, he will have to retrace his steps from some of what he considers advanced points of civilization. He will have to learn, among other things, that fresh air is God's greatest gift on earth, and that whatever shuts out fresh air shuts out health and happiness. In house infection he will find the key to the entire problem of stamping out tuberculosis.

SUMMARY.

1. Tuberculosis is a disease due to the parasitic growth of a micro-organism on the tissues of a human being or animal. Being due to organic life, it is communicable.

2. Tuberculosis is contagious. The contagion of tuberculosis is different from the contagion of acute contagious diseases, however. It is slow and can be avoided easily in the presence of a consumptive, whilst that of acutely contagious diseases is rapid and cannot be avoided in the presence of those who have such diseases.
3. The contagion of tuberculosis is closely associated with the house. An inclosure of some kind is necessary to make it effective.
4. The house is the granary of the tubercle bacillus. It is the place in which tuberculous matter is kept vital until the bacillus can find a new host.
5. Out of doors tubercular matter becomes devitalized in a short time through water, light and air. Enough cannot accumulate in a vital state to create a contagious environment.
6. Everyone has some resisting power to tuberculosis. Some have more than others. Practically all have sufficient resisting power to withstand occasional exposure to tuberculosis and exposure out of doors.
7. For an implantation of tuberculosis prolonged intimate exposure and an intensely contagious environment is necessary to overcome resisting power. This is had in the home and the workshop.
8. The house prepares soil for the tubercle bacillus.

BOVINE TUBERCULOSIS A FACTOR IN THE CAUSATION OF HUMAN TUBERCULOSIS.

By Mazyck P. Ravenel, M.D.,

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THE work of Villemin in 1865 first proved definitely that tuberculosis was a communicable disease, and also went far to show the unity of the disease as seen in man and the lower animals. Whatever doubts may have existed as to the accuracy of his teachings were dispelled in 1882 by the discovery of the bacillus of tuberculosis by Koch, who demonstrated also that the same germ caused all the various manifestations of the disease seen in different parts of the body and in different species of animals. Based on this opinion, laws were made in almost every civilized country in the world regulating the use of milk and meat from tuberculous cattle in order to protect man from this source of infection.

Until 1896 there was a practical unity of opinion among physicians on these points. In this year Dr. Theobald Smith showed that the tubercle bacillus as found in cattle had a very much greater power of producing disease than that ordinarily found in man. It remained for Koch, however, in repeating Dr. Smith's experiments, to draw the sweeping conclusions that tuberculosis of man and tuberculosis of cattle were so different in their nature that it was impossible to transmit human tuberculosis to cattle, and that man had little or no cause to fear contagion from cattle.

These views were so subversive of existing beliefs and so radical in their effects on public-health laws that a storm of protest was aroused, and much study of the subject has resulted.

I wish to examine into the soundness of the stand taken by Koch in the light of the evidence at hand. The subject may be approached from three standpoints—first, direct experimental transmission of tuberculosis from man to animals; second, clinical evidence of its transmission from animals to man, and third, theoretical considerations. The first point is susceptible of direct experimental proof, and can be disposed of in a few moments. Chaveau was the first, in 1868, to prove that cattle could be infected with tubercular material from man. He succeeded in infecting his animals through the digestive tract by intravenous inoculation and by subcutaneous inoculation. At the time tuberculin had not been discovered, but Chaveau foresaw the objection that might be raised as to the previous existence of tuberculosis in the experimental animals, and guarded against it by selecting them from the Jura Mountains, where the disease was unknown.

In 1879 Bollinger succeeded in transmitting tuberculosis of man to cattle, and of others who have made similar experiments I may mention Klebs, Crookshank, Kitt, Sidney Martin, and more recently, since the publication of Koch's paper in 1901, Thomassen, Nocard, De Long, Arloing, Westenhoffer, Max Wolff, Schottelius, Febiger and Jensen, and Hamilton and Young. At the laboratory of the State Live-Stock Sanitary Board of Pennsylvania we have also succeeded repeatedly in transmitting human tuberculosis to cattle. These experiments were done before the publication of Koch's paper, and most of them reported at the London congress in 1901.

I may single out from the list the experiments of Hamilton and Young, which have just been published. They began with twenty

(20) calves, one (1) of which died during the preliminary period of observation from some intercurrent affection. Nineteen (19) were inoculated with human material, and of these, fifteen (15) developed tuberculosis, while four (4) resisted the inoculation The diagnosis in all fifteen (15) of these cases were made by macroscopic and microscropic examinations, as well as by the reinoculation of guinea pigs. Lastly, in this connection we have the report of the Imperial Sanitary Office of Germany, which will be considered later at greater length, where out of sixteen (16) inoculations made with material taken from children they succeeded in producing tuberculosis in cattle four times, or 25 per cent. In other words, in one-quarter of all cases of tuberculosis in children examined by them they succeeded in transmitting the disease to cattle.

The second phase of our subject is the consideration of transmission of tuberculosis from cattle to man, and here we are deprived of the benefit of direct experimental evidence. We have, however, a number of cases in which accidental inoculation has taken place, some of which have ended in general infection, followed by death. I have myself had four such cases, come under my observation, two occurring in an assistant in my laboratory. In both of these cases the source of infection was known to be bovine, which was further proven by the excision of the lesion, the inoculation of guinea pigs, and the isolation of the bacillus in pure culture. I have here a photomicrograph of a section taken from one of these cases. In addition to this, cases have been reported by Krause, Troje, Spronk and Hofnagle, Lassar, Tschering, Pfeiffer, Hartzell, Kurt Muller, De Long, Joseph and Trautman. I will give the details of only one of these, the case reported by Troje, which is one of the most typical and is able to bear the most severe criticism. The journals report that this case was submitted to Koch, who agreed that there was no point lacking in the evidence.

A young butcher in good health, and with no hereditary taint, wounded his right forearm slightly while working on a tuberculous cow. The wound healed under treatment, but six weeks later showed signs of inflammation, and a tubercle formed on the internal face of the elbow. There were two small fistulæ on the forearm, and enlargement of the ulnar and axillary lymph glands. A month later the middle forearm was covered with granulations, which steadily increased in area, and in spite of treatment, at the end of two months assumed the character of lupus. Histologic examination at this time proved the tuberculous character of the disease. Two years after the injury Troje found an abscess which extended into the deep muscular layers. The pus contained tubercle bacilli, and the tissues showed typical tuberculous lesions. Some months after the glands of the left axilla and subclavicular space were extirpated, and proved to be tuberculous. All possibility of infection from human sources were excluded by Troje.

The second consideration under this head is inoculation by ingestion. It has been proven repeatedly by experiments that ingestion is an easy way in which to infect animals, and we have good evidence that in mankind such cases occur also. It must be admitted, however, in our clinical cases that all of them have some defect, inasmuch as we cannot exclude positively all other sources of infection. In regard to this, however, the evidence is as good as we have in cases which we admit to be by inhalation. It is generally accepted by all who have worked along these lines that inhalation of dried sputum is the chief source of infection from man to man, and yet if we demand strict proof of this, very little evidence can be adduced. Of the cases of clinical evidence through feeding which have passed into literature I may mention those of Von Ruck, Stang, Demme, Gosse, Ollivier, Law, Ebers, Bang and Rievel, thirty-eight cases in all, where the evidence is very direct and very strong. One of these cases reported by Gosse, of Geneva, is so strong that Nocard has well said, "It has almost the value of an experiment." Gosse was a physician himself and the son of a physician. His own daughter was infected by drinking the milk of a cow with tuberculosis of the udder on his own farm, and he had the remarkable courage to perform a post-mortem and give the results to the scientific world.

Directly in line with infection by ingestion comes the consideration of post-mortem evidence, which is somewhat contradictory. In England, for instance, we have a general average of primary intestinal tuberculosis of something over 25 per cent. In London Guthrie reports at the Children's Hospital at Paddington 24.6 per cent.; Still, at the Great Ormond Street Hospital, 23.4 per cent.; Shennan, at the Royal Hospital at Edinburgh, 26.1 per cent. In Germany, according to Koch's figures, the average is very low, but it must be said that he has not so far given a fair consideration of the available evidence. We have the report of Heller, of Keil, who, while he found only 1.43 per cent. of primary intestinal tuberculosis, found but 37.8 per cent. in which the principal lesion was in the intestine, the mesenteric gland, or the abdominal organs, so that we may conclude that all of these cases were of intestinal infection. Furthermore, Professor Hueppe, of Germany, states that the percentage of primary intestinal tuberculosis in Germany varies from 25 to 30 per cent. We have also the figures given by Von Hanseman, of Berlin, who states that he has seen twenty-five cases of intestinal tuberculosis during seven years, and considers it much more common than is generally believed.

In America we have not a great collection of figures on this point, but with perhaps a single exception those at hand indicate a much smaller percentage of primary intestinal infection. This difference in different countries and in different parts of the same country is, no doubt, due in part to a difference in local conditions, but is more largely due, perhaps, to the method of observation and the interpretation of results. The finding of the oldest lesion in the lung does not, in my opinion, at all indicate that infection was through the respiratory tract. In our work at the laboratory of the State Live-Stock Sanitary Board we have been repeatedly struck with the extensive involvement of the lungs in cases which were infected by feeding, when the intestine of the same animal showed either very slight lesions or no lesion whatever.

Among the specimens in the exposition you will find several which illustrate this point. You will see there the intestines and lungs of two monkeys which were infected by feeding with pure cultures of tubercle bacillus in a series of experiments on the comparative virulence of the human and bovine bacilli. In both the lungs are extensively diseased. We were unable to find any lesion whatever in the intestine of one, and in the intestine of the other (A 45,007) there was only a slight lesion, with enlargement and caseation of three of the glands in relation to the upper part of the tract. There was found, however, enlargement and caseation of the cervical lymphatic glands, indicating infection through the tonsils or some part of the throat, a method of infection which is more frequent in children than generally believed. If these two specimens were shown without any history, most pathologists would put them down as instances of respiratory infection, yet they were kept under conditions which precluded the possibility, and were tested with tuberculin before the experiment began. You will see also the lung of a cow showing cavity formation. This animal was also infected by feeding, and in spite of the extensive involvement of the lungs, no injury could be found in the intestinal tract. Lastly, you will find the tonsils of a pig showing deep ulceration, and the lungs of the same animal, which are thickly sewn with tubercles. This pig was one of four, two of which were fed human and two bovine tubercle bacilli. All of them contracted general tuberculosis, most marked in the lungs, and ending in death. Three of the four presented lesions similar to the one shown, while in one only could any injury of the intestine be found. In three the cervical and mediastinal glands were markedly involved.

I am prepared to go even further than this, and hold that even when infection takes place through the intestine we may have the first and oldest lesion show itself in the lung. The late Professor Nocard, while collecting a serum from horses for culture medium, found that if he collected his blood at a certain period of digestion his serum would become contaminated even if he divided it into small lots of 100 c. c. each. On the other hand, if collected during fasting, he could preserve his serum in liter flasks without the loss of a single one. In seeking an explanation for this two of his assistants, Desoubry and Porcher, found that if they fed dogs with soup containing a considerable amount of greasy material, and then collected the chyle during digestion, they would find many colonies of bacteria in plates made from this material. On the other hand, when they gave the dogs a plain bouillon without grease no bacteria whatever would be detected in the chyle. During the past winter at the laboratory of the State Live-Stock Sanitary Board we have carried out similar experiments. We would keep a dog under observation some days to determine that it was entirely healthy. Then a purge of castor oil was given to clear out the intestine, after which the animal was fasted for twenty-four hours. At the end of this time a single meal consisting of equal parts of melted butter and warm water made into an emulsion, in which tubercle bacilli were stirred, was given. After three to four hours, during active digestion, the dog was chloroformed, and as much chyle as possible collected, together with the mesenteric glands. The intestine of the dog was in every instance examined throughout, and in two animals microscopic sections were made from several portions of the intestines. In all cases they were found to be entirely normal.

In ten animals experimented on we found tubercle bacilli in eight, showing that the tubercle bacillus can pass through the perfectly healthy intestine without leaving any trace, and this takes place in a very short space of time. When we remember that the chyle goes directly into the thoracic duct and is thrown into the circulation near the heart, from which it passes to the lungs immediately, we can understand that infection through the intestine may readily show itself first in the lung. I have here a photograph of the organs of a guinea pig inoculated with the material from one of these dogs, which, I think, justifies me in saying that tubercle bacilli pass through the intestine in large numbers. The extent of involvement in this guinea pig shows, I believe, that the material with which it was inoculated contained many tubercle bacilli. When an observer tells me he has found no evidence of primary intestinal tuberculosis I ask him to explain the large number of cases of mesenteric involvement and of peritoneal infection, which must have taken place by the passage of tubercle bacilli through the intestine, although the intestine itself may show no injury. Professor McFadyean, of the Jenner Institute, has recently published a paper bearing on this point and bringing out a fact of great interest. In a comparative series of experiments he fed some monkeys bovine tubercle bacilli and some human. Those infected with bovine material showed no intestinal involvement whatever, but general infection of the lungs and abdominal organs, whereas those fed with human material showed intestinal involvement, together with infection of the other organs of the body. This point needs to be investigated further, but so far as it goes indicates that the bovine tubercle bacillus passes the intestinal wall without producing lesions, whereas the human tubercle bacillus in passing leaves a mark of its effect. In the experiments done by myself the bovine tubercle bacillus was used in the eight successful cases.

Perhaps the strongest evidence we have of the infection of human beings by the bovine tubercle bacillus is the finding of bovine tubercle bacilli in the intestines of children who have died of intestinal tuberculosis. The first of these cases reported was from the laboratory of the State Live-Stock Sanitary Board, the material having been sent by Dr. Alfred Hand, of the Children's Hospital in Philadelphia. His pathological report stated that it was the clearest case of intestinal tuberculosis that he had ever seen. The organism was isolated in pure culture, and found to correspond in every way with the bovine tubercle bacillus. It proved fatal to two calves in seventeen and twenty-seven days, respectively, and a six-year-old cow succumbed in seventeen days This organism was sent to Dr. Theobald Smith, who examined it by his recently-described method of cultural differentiation. He pronounced it to be the bovine organism.

Dr. Smith has added his name to the list of those who have found the bovine tubercle bacillus in the intestine of children. During the past year Dr. de Schweinitz, of the Bureau of Animal Industry, has found two cases in which the infection was evidently of bovine origin, as judged by the virulence of the bacillus isolated for cattle, the test proposed by Koch. In Europe Febiger and Jensen have reported three such cases, and the Commission of the Imperial Sanitary Office of Germany, as before stated, has found four cases out of sixteen examined.

We may pause here a moment to consider the report of this commission, which is remarkable. Cultures were obtained from thirty-nine sources, twenty-three of which were adults and sixteen children. There were nineteen cases of pulmonary phthisis, four cases of bone tuberculosis, two cases of cervical adentitis, one case of genito-urinary tuberculosis, six cases of miliary tuberculosis, and seven cases of the digestive tract. Of the thirty-nine cultures examined nineteen produced no lesion in cattle, nine caused a slight enlargement of the glands of the shoulder, without tendency to generalization; seven a somewhat more marked involvement of this gland, while four, all obtained from children, caused a generalized infection. Two of these four cases are described as "miliary tuberculosis," beginning from a bronchial adenopathy and a mesenteric adenopathy, respectively, while the remaining two were cases of intestinal tuberculosis. The cultures from the last two showed a very intense virulence for calves.

The commission points out that two of these four children did not die of tuberculosis, hence they conclude that in only two out of the thirty-nine cases are they able to say that infection with the bovine tubercle bacillus has caused fatal tuberculosis in man. It is difficult to see the force of such reasoning.

Thus from the camp of the enemy, if I may use such a word for a scientific discussion, where our aim is only to know the truth, we obtain the strongest evidence that bovine tuberculosis is transmissible to man. We must either admit that all of these were cases of bovine infection of children or we must say that the human and bovine bacillus are one and the same. From the hygienic standpoint it makes very little difference which view we take.

Professor Orth, in answer to the report of the commission, places different interpretation on their results, and one which appears more rational. He holds that the seven animals which showed marked involvement of the lymph glands of the shoulder should be considered as infected with human tuberculosis; that the infection was not more grave proved only that in cattle, as in man, tuberculosis may undergo spontaneous cure. Of the thirty cultures studied, he considers that eleven, or 28 per cent., were virulent enough to infect cattle.

There remains but one more consideration, and that is the information to be obtained from the study of the tubercle bacilli derived from different sources, and credit belongs to an American, Dr. Theobald Smith, for having demonstrated the difference in cultures obtained from human and bovine sources.

The human tubercle bacillus is much easier to obtain in pure culture than the bovine. In the first generation a luxuriant growth will often take place, and generally subcultures can be obtained on glycerine agar from the first generation. The bovine tubercle bacillus, on the other hand, grows very slowly and scantily in the first generations. Cultures for several generations show only an exceedingly thin layer on the surface of the medium, oftentimes resembling ground glass. Some cultures require six to eight months before enough growth can be obtained with which to inoculate animals. Growth on glycerine agar will take place only after the organism has been cultivated for several generations on blood serum. Some cultures which I have isolated have required a year before a growth on glycerine agar would take place.

The staining characteristics of the two organisms are somewhat different. The human bacillus is long, slender and shows beading, whereas the bovine bacillus is thick, shorter and stains evenly. I do not feel, however, that a positive diagnosis can be made between the two organisms by the characteristics just given. The chief difference between them is their virulence. The bovine tubercle bacillus has a pathogenic power tremendously in excess of that shown by the human bacillus, and this holds true for all experimental animals which have been tried, with the exception, perhaps, of guinea pigs and swine. These two animals are so susceptible to both types of the bacillus that is hard to draw a distinction. The animals experimented on include horses, donkeys, sheep, goats, dogs, cats, rabbits, guinea pigs and monkeys. There is absolutely no case in literature, so far as I am aware, in which one single animal has been found to be more susceptible to the human tubercle bacillus than to the bovine. This greater virulence of the bovine tubercle bacillus is shown by whatever method of inoculation we use.

As said by Villemin, man shares with cattle the sad privilege of perpetuating tuberculosis. Would it not, then, be an anomaly for man, who is acknowledged to be one of the most susceptible of all animals, to be an exception to this general rule of increased virulence of the bovine bacillus? If all other animals excepting those which are equally susceptible to them both succumb more quickly to the bovine bacillus than to the human, would it not be strange for one of the most susceptible of all animals to show an immunity to the most virulent form of tuberculous virus known? Our nearest relative, the monkey, also shows this greater susceptibility to bovine infection in a marked degree, as proved by De Schweinitz, De Long, at the laboratory of the State Live-Stock Sanitary Board of Pennsylvania, and by others. Therefore I feel that we are justified in concluding that this greater virulence probably holds good for man also.

In concluding, I wish again to call attention to one point, which by itself alone proves that bovine tuberculosis is a factor in the spread of the disease in the human race, namely, the finding of the bovine tubercle bacillus in the intestinal tract of children. On this ground alone we may rest the case, even if there were not so much corroborative evidence. The proportion of cases in which this finding has been made is large, though exact figures are not at hand. The German commission found the bovine bacillus in four out of sixteen cases examined; De Schweinitz has found it twice in four cases, and at the laboratory of the State Live-Stock Sanitary Board I have found it in two out of five cases examined.

We are, then, justified in saying that bovine tuberculosis is transmitted to the human race, chiefly to infants, in a certain proportion of instances, and is, therefore, a menace to human health. Our present knowledge does not enable us to define exactly the extent of the danger, but that it exists cannot be denied. It is, therefore, the duty of physicians and officers of health to take every precaution against the infection of many by tuberculous cattle and their products.

SOME OBSERVATIONS ON THE TUBERCULOSIS OF ANIMALS.

By D. E. Salmon, D.V.M.,
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The tuberculosis of animals is a subject of very great importance from more than one point of view. To the agriculturist, the economist, the statesman, it causes, or should cause, anxiety because of the loss of food-producing animals which it occasions and because of its tendency to counteract the efforts of breeders to improve the quality of such animals; to the physician and sanitarian it must be a matter of grave concern because of the possibility of its having an injurious effect upon the public health; to every citizen who possesses the finer feelings developed by civilization, intelligence and cultivation it must be a matter of some solicitude as to whether the steak which he eats for his breakfast was cut from the carcass of a steer affected with generalized tuberculosis or whether the milk which he drinks with his luncheon was produced by a cow having tuberculosis of the udder. However, in the remarks which I have the privilege of making before this audience I shall treat the subject of animal tuberculosis from a medical point of view, with especial reference to the lessons of comparative pathology.

There are two questions of superlative interest before the medical profession at this time relative to animal tuberculosis. First, is animal tuberculosis communicable to man? Second, in case it is communicable to man, how frequently does such transmission occur?

Clinical observation has not been able to give us satisfactory answers to these questions, and experimentation has been forced to approach them by more or less indirect routes which necessarily has made the evidence obtained somewhat inconclusive and liable to more than one interpretation. It appears, however, that some rays of light are beginning to penetrate the obscurity, and that all must soon agree upon the answer to the first of the questions which I have just formulated. The second question cannot be answered definitely for a long time to come.

WIDE RANGE OF ANIMAL SPECIES AFFECTED WITH TUBERCULOSIS.

In the whole list of infectious diseases of animals there is probably not one which affects a larger number of species, or species which are more widely separated as to the position which they occupy in the scale of animal life, than tuberculosis. Not only does it affect most mammals, such as man, monkeys, horses, cattle, sheep, swine, goats, dogs, cats, guinea pigs, rabbits, mice, rats, camels, zebras, giraffes, deer, bear, lions, tigers, jackals, panthers, leopards, foxes, etc., but it affects birds, such as poultry, pheasants, pigeons, parrots, canaries and other species, and it also affects fish, frogs and snakes. It is most remarkable that a bacillus which has proved so difficult of cultivation in the laboratory has been found capable of causing disease in fish, reptiles, amphibia, birds and mammals. The difference in chemical composition, and, above all, in temperature, between birds and fish, from a bacteriological point of view, is tremendous, and yet it is conclusively established that both may be affected with tuberculosis and that the etiological factor in each case is Koch's bacillus.

THE COMMUNICABILITY OF TUBERCULOSIS BETWEEN DIFFERENT SPECIES OF ANIMALS.

The communicability of tuberculosis between numerous species of mammals has been experimentally demonstrated. I shall not undertake to give an exclusive list of such species, as a brief statement is sufficient for the purpose which I have in view at this time. The infection of rabbits and guinea pigs with both human and bovine bacilli is a common experience. Koch successfully inoculated field mice, white rats, rabbits, cats, and a marmot from the ape. De Schweinitz infected apes with both human and bovine tuberculosis. Dogs and pigs have been infected with both human and bovine bacilli by several investigators. The horse, goat, sheep and cat have been readily infected with bovine tuberculosis. Mohler has infected goats with human tuberculosis. Theobald Smith infected guinea pigs from the nasua, and guinea pigs and rabbits from swine. De Jong infected goats with both human and bovine tuberculosis. Courmont and Dor infected fowls with material from both human and bovine sources, and also guinea pigs and rabbits with avian tuberculosis. Fish, frogs and other cold-blooded animals have been infected with both human and bovine tuberculosis in the experiments of Dubard, Dieudonné, and Herzog. Bovine animals have been infected with bacilli from human sources by Ravenel, De Schweinitz, Mohler and Theobald Smith in the United States, and by De Jong, Delépine, Orth, Stenström, Fibiger and Jensen, Max Wolff, Nocard, Arloing, Behring, Dean and Todd, and others abroad, notably by the German Tuberculosis Commission as reported by Kossel.

Not all attempts to infect one species of animals with tubercle bacilli obtained from a different species of animals are successful; indeed, failures often occur in attempting to inoculate tuberculosis from individual to individual within the same species. These differences in results have been due to three causes—1. Variation in the number of bacilli inoculated; 2. Variation in the virulence of the bacilli inoculated; 3. Variation in the resisting power of the animals used in the experiments. In the latter experiments bacteriologists have taken precautions to administer uniform doses of bacilli, so that the first factor mentioned as tending to produce variable results has been to a great extent eliminated. However, the difference in the pathogenic activity of bacilli from different sources and the varying power of resistance possessed by different individuals of the same species, and to a greater degree by individuals of different species, are factors which must always have an influence upon the result, and must, for that reason, always be taken into account.

The important problems in the great subject of tuberculosis are not so simple that they can be solved by an experimenter who ignores the work of others and starts out with a few cultures of bacilli and a few experimental animals to settle the whole question by himself and on his own lines, as some enthusiastic gentlemen have discovered during the last few years. All lines of experimentation must be considered, and where there is an apparent lack of harmony the reason for it must be discovered before dogmatic conclusions are promulgated. Above all, we should endeavor to discriminate between positive and negative results, and not make the mistake of ignoring or suppressing the experiments which demonstrate something, in order that we may accept the, perhaps, more numerous ones which have not succeeded and which are absolutely barren as a source of information. The field of comparative medicine is a broad one, and it is the part of wisdom for those engaged in human medicine to look to it for the solution of those difficult problems which have so long eluded their grasp.

DIFFERENCES OBSERVED IN THE TUBERCLE BACILLUS FROM DIFFERENT SOURCES.

The study of avian tuberculosis throws considerable light upon the subject of the variation of the tuberculosis virus. This type of bacilli obtained from certain birds is very virulent for fowls, while it is extremely difficult to infect fowls with human tuberculosis. Dogs are refractory to the avian bacilli, but are quite susceptible to the human; guinea pigs are extremely susceptible to human bacilli, but in a majority of instances resist the avian; and, strangely enough, rabbits appear to be equally susceptible to the avian and the human types.

The human bacillus, as is well known, grows between the temperature limits of 30° and 40° C., while the avian is able to grow between the limits of 25° and 45° C.—that is, the avian is able to grow through a range about five degrees higher and five degrees lower than the human bacillus. The cultures of human tuberculosis appear dry, scaly or verucose, dull and hard; those of the avian are moist, oily, wrinkled and soft. The human bacillus does not vegetate at all at 43° C., while the avian multiplies rapidly and abundantly at that temperature. The avian bacilli are longer, thinner, and more granular than the human bacilli.

An equally interesting type of tubercle bacilli was obtained by Dubard from tubercular carp. This bacillus was able to vegetate between the temperature limits of 10° and 37° C.—that is, it could not grow at as high a temperature as the human by three degrees, but it could grow at a point twenty degrees lower. It is very vigorous in its development, the rods at first being short and broad, but in cultures growing into long-branched filaments. On veal-broth agar, after twenty-four hours' vegetation at ordinary temperatures, there existed a visible trace of the culture, which by the twelfth day became white, smooth and shiny like the avian.

Another extremely interesting type of the bacillus tuberculosis was described by Friedmann, having been obtained from a tuberculous turtle. This bacillus was able to vegetate even at the freezing point, and the temperature limits of its growth were placed by the observer at 0° to 43° C. It was, therefore, able to grow at a temperature even higher than the human bacillus and at thirty degrees lower. Friedmann says that, as A. Kayserling correctly points out, it is often impossible to establish morphological differences between the individual bacilli in pure cultures of various kinds of tubercle bacilli, such as human, avian, piscine and blindworm, yet he found from many preparations made from pure cultures that the bacilli of piscine, blindworm and frog tuberculosis were considerably shorter and usually thicker than the human and bovine or the turtle bacilli, even when the latter were grown at the lower temperatures.

These examples of tuberculosis affecting animals which differ so remarkably from each other, and these tubercle bacilli which vary considerably in their morphology, and even to a greater extent in their cultural characteristics, have led pathologists to inquire if this tuberculosis of man and other mammals, of birds, of reptiles, of amphibians, of fish, was indeed one and the same disease. In fact, they have gone farther than this, and have seriously raised the question as to whether the human and bovine bacilli of the mammalian type produce an identical disease, and as to whether human tuberculosis can be made to infect bovine animals or bovine tuberculosis to infect man.

These questions are very important, since they indicate a possible source of human infection, which, if demonstrated, would require special sanitary regulations for its suppression. There is a great difference, from a prophylactic point of view, whether a disease is confined to one species of animals, which may be readily placed under supervision and control, or whether it affects numerous species, some of which are almost beyond our reach. If mankind is susceptible only to human tuberculosis, the problem of controlling this disease in the human species is greatly simplified, but if the infection of man occurs from animals, and particularly from the domesticated animals with which he is closely associated and which produce such an important part of his food supply, then new centers of infection must continually occur until this source of danger is eliminated. Direct experiments to show whether man can be infected with animal tuberculosis are, for obvious reasons, impossible, and the deductions from clinical observations are uncertain and often misleading. We must, therefore, form our opinions from our general knowledge of the behavior of tubercle bacilli as they are studied in different species of animals and under different conditions of environment.

Theobald Smith has devoted much study to human and bovine bacilli, and has pointed out differences which he considers sufficient to constitute distinct types. He says:

"With one exception (one out of seven) the human bacilli grew from the start much more vigorously than the bovine bacilli. With several the rapidity of growth was surprising. After two weeks these cultures appear as a whitish surface-layer of a pearly luster of varying thickness. The bovine cultures show more discrete colonies, or a thin, uniform layer, having the appearance of ground glass. This difference in the vigor of growth has, in general, maintained itself, with the slowly-increasing tendency of all cultures to multiply more rapidly.

"The size of bovine bacilli in the various cultures was quite constant. They were all quite short, usually about 1 to 1.5 m. long, more rarely 1 to 2 m. These measurements do not tend to change appreciably with prolonged cultivation. The bacilli are straight, not very regular in outline. Some are broader at one end than at the other; some broader in the middle than at either end, *i. e.*, spindle-shaped; some may be so short as to resemble oval cocci. With the human bacilli the form was not so constant. The earliest cultures of Sput. II, IV, V and VI contained forms from 1 to 2 m. long, hence closely approximating the bovine forms. Others may be longer from the start. In all, however, there is a tendency, not noticed among bovine cultures, to grow longer under artificial cultivation. . . . .

"In the earliest cultures, therefore, morphological differences are not necessarily characteristic, and cannot aid us in attempts at determining the origin of cultures. . . . .

"If we undertake to summarize the observations made with microscope and culture tube upon these bacilli, we somewhat hesitatingly formulate the following general statements:

"1. Bovine and other animal bacilli (except nasua, which is regarded as coming from man) grew less vigorously for a number of generations than the sputum bacilli. Sputum I is an exception, and is probably an atypical form.

"2. Bovine bacilli are much less influenced by certain modifications of the culture medium.

"3. Bovine bacilli tend to remain short; human bacilli are either more slender from the start or become so during cultivation."

Recently Smith has given another and perhaps more definite distinguishing feature between human and bovine bacilli. If ordinary bouillon prepared from fresh beef with 3 to 5 per cent. glycerine added be used, and if the acidity be made equivalent to about 2 per cent. of normal acid, phenolphthalein being the indicator, the reaction of the bouillon during the formation of the membrane approaches the neutral point or becomes slightly alkaline in the case of bovine bacilli, but remains acid in the case of human bacilli.

MODIFICATION OF THE MORPHOLOGY AND VIRULENCE OF TUBERCLE BACILLI BY CULTURE AND BY PASSING THROUGH VARIOUS SPECIES OF ANIMALS.

In the study of avian tuberculosis it was found that the great majority of inoculations of fowl tuberculosis to guinea pigs and of mammalian tuberculosis from guinea pigs to fowls failed to infect. There were some who concluded that the disease could not be transmitted between these species. However, it was found that an occasional guinea pig when inoculated with avian tuberculosis would succumb, with generalized visceral granulations, and after passing through a number of mammals this bacillus of avian origin may become very virulent for the guinea pig, and even pathogenic for the dog, and at the same time may lose its virulence for the gallinaceæ. Cadiot, Gilbert and Roger succeeded in infecting fowls with tuberculosis of canine origin. A fowl which had been inoculated and fed with tubercular material from the dog was found at the autopsy to have granulations in the liver, spleen and kidneys, and tuberculous ulcerations of the intestine. The bacilli from this fowl seemed to have been modified somewhat and to have acquired the pathogenic properties which made a sort of intermediate type between the human and the avian. Another fowl, inoculated from the liver of the first, died at the end of one hundred and twenty-one days with tubercles at the point of inoculation and numerous granulations of the peritoneum, liver, spleen, ovaries and lungs. It had not entirely lost its original properties, however, for, inoculated upon a dog, which was killed at the end of three months, it caused the formation of tubercles in the liver, kidneys and the lungs. From subsequent investigations these authors conclude that by injecting horse serum into the abdominal cavity of fowls every ten days the natural immunity of these birds to mammalian tuberculosis is so greatly diminished that they can be almost invariably infected by inoculation.

Dubard, in studying the tuberculosis of carp, concluded that the infection was caused by the contamination of the ponds with tubercular material from the human subject on account of "the exact coincidence of the appearance and of the cessation of the disease of the fish with the appearance and the disappearance of contamination of the ponds by human tubercular products." This observation led him to make experiments in which, he says, he succeeded many times in producing the piscine type of tuberculosis by inoculating cold-blooded animals with pure standard cultures of the tubercle bacillus. He found all cold-blooded animals with which he experimented susceptible to human tuberculosis. The most susceptible were the gray lizards and frogs; the least susceptible were the adders and the voracious fishes. Král and Dubard state that one of them has demonstrated that the bacillus of Koch acquired, by passage through cold-blooded animals, the property of developing at ordinary temperatures on all the laboratory media. At the same time these cultures, which have the greatest resemblance to those of ordinary tuberculosis, lose their pathogenic power for animals of constant temperature. The facility with which this modified bacillus grows, the rapidity with which it accomplishes its vital cycle (which appeared to the authors very complete), the dichotomic filamentous forms that it presents in the course of its evolution seemed to them an exaggeration of what occurs with the tuberculosis previously known. It was found that the maximum temperature at which it would grow was below 30°, and it was only after great difficulty that they succeeded in obtaining cultures at 37°. However, by proceeding progressively, they succeeded in conquering its repugnance to elevated temperatures. The same result might be obtained by inoculating lizards that are kept in an incubator. There is thus produced a select race which grows well at 37°. It is much more easily cultivated on a new soil than the human bacillus and is only slightly sensitive to variations of the acidity or alkalinity of the media, but is otherwise very sensitive to sudden changes of the chemical composition of such media. The closer this type is to its piscine origin the more it has the avian aspect; the farther away it is and the longer it has been cultivated at 36° the more it is like the human.

One of these authors, by starting with the bacillus tuberculosis piscium and passing it through a series of guinea pigs, obtained a tuberculosis which differed in nothing from the human in its cultural, morphologic, and pathogenic characteristics.

Herzog, in a recent publication, concludes from his experiments that the bacillus of mammalian tuberculosis loses its power to infect mammals when it is passed through the organism of cold-blooded animals. The longer mammalian bacilli are allowed to remain in the body of the frog the longer do guinea pigs live after they are inoculated with these bacilli. He says that Dieudonné was even more successful in similar experiments conducted by him. He found that of frogs inoculated directly with mammalian tuberculosis almost all survive; of the frogs inoculated from this first set of frogs a few die, the majority survive, while of the third group of frogs inoculated from the second group the majority die, a part survive. The bacilli are found to have undergone a great change morphologically; they are short and broad, and hardly to be distinguished from those of fish tuberculosis. The cultures, too, are very similar to the cultures of fish tuberculosis, and would only grow between 22° and 30°. Attempts to obtain cultures at the maximum temperature mentioned had been unsuccessful up to the time of reporting. The bacillus was no longer pathogenic for guinea pigs.

Friedmann also found that the turtle bacillus when inoculated in guinea pigs in large doses produced true tubercles containing both giant cells and tubercle bacilli.

Comparative studies of human and bovine bacilli have been made by numerous investigators. In a recent article Wolbach and Ernst state with reference to their work:

"Rarely in the human cultures exceedingly large, round bodies, several microns in diameter, were found in branched bacilli at the point of junction of the three branches; still more rarely the center of this body was occupied by a round, unstained refractive body such as has been described by Fischel in the club swellings of the avian bacillus.

"With the exception of the last-described forms, which undoubtedly are degenerate, all those found in the human cultures were found in the bovine cultures, although with less frequency. Branched bacilli and the threadlike rods were found, while the small and large deeply-staining sporelike bodies were found in as great abundance as in the human cultures. In the cultures isolated by ourselves the average lengths were less than in the human cultures, rarely exceeding six to eight microns in length. In the bovine culture from Král exceedingly long threadlike forms were found.

"Remarkable as the changes described seem when we compare the two extremes—one the short rods, averaging about one micron in length, occurring on egg; the other the long filiform and branched bacilli, ten to fifteen microns long, occurring on brain—yet they are constant in their occurrence, and one extreme may be changed into the other at once by change of medium."

In their summary these authors say: "1. The tubercle bacillus undergoes marked changes in morphology with change of culture medium; 2. The microscopic characteristics of a fully-developed culture are fairly constant for each medium."

The rapidity with which the morphology of the tubercle bacillus changes when the cultures are made on different media indicates that it is possible to lay too much stress on the appearance of the rods as indicative of different types. As the body of an infected animal is simply a culture medium for the inoculated bacilli, we should infer from the laboratory experiments just mentioned that bacilli from the same culture, if introduced into the bodies of animals of different species, might in each case develop different morphological characters. For this reason the morphology cannot be regarded as a very satisfactory means of distinguishing between tubercle bacilli from different sources. Indeed, in the same microscopic preparation we generally find both long and short rods, and it is sometimes difficult to say of which there are the most or what is the average length. I have recently been shown a photograph by De Schweinitz of two microscopic shreds from the same culture, one of which was made up entirely of short rods and the other entirely of long rods. Now, as the bacilli in each of these shreds appeared to reproduce their individual characteristics, it is quite likely that a culture made from one shred would have a very different appearance from that made from the other shred so far as relates to the morphology of the rods.

About two years ago, in order to study the changes which occur in tubercle bacilli grown under different conditions, I requested Schroeder to carefully inject some human tubercle bacilli into the udder of a dry cow. He therefore injected 40 c. c. of virulent human culture through the duct of the teat October 3, 1901, using a blunt canula and every precaution to prevent mechanical injury. This injection was followed by considerable swelling and induration of the affected quarter of the udder and by the secretion of 300 to 400 c. c. of a gray, syrupy fluid having a glistening appearance, in which were found numerous leucocytes, fat globules, and tubercle bacilli. There is still at this time (January, 1904) some induration of the udder, and the secretion containing tubercle bacilli has continued since the time of infection. It is quite remarkable that this human bacillus, which is not pathogenic for bovine animals, should have been able to maintain its existence and to multiply within the milk ducts of the cow for this long period of time. The virulence of the bacilli has been tested from time to time, but no material change in this respect has been demonstrated. Cultures on egg medium recently examined show that the colonies are easily broken up, and in this character resemble bovine cultures, but otherwise no change has been observed.

Pearson and Ravenel infected a calf with a human culture of moderate virulence by administering large and repeated doses. The animal lived one hundred and six days, and at the autopsy showed tubercles in the bronchial glands, liver, omentum, mesentery and lungs. A second calf inoculated from the first died in forty-eight days; a third calf inoculated from the second died in twenty-three days, while the fourth and fifth of the series each died in twenty-four days. The authors believe not only that they succeeded in conveying human tuberculosis to calves by giving large and repeated doses of the culture, but that by successive passages through calves they brought about a marked increase in the virulence of this culture.

Theobald Smith, in commenting upon this experiment, says: "I am not prepared to accept this single experiment as establishing the possibility of an increase of virulence of the human variety of bacilli in cattle. In spite of all precautions, errors may creep in when a species eminently susceptible to the bovine bacillus is used, when the experiment extends over such a long period, and so much culture fluid is injected that freedom from errors can only be established by several concordant results. On the other hand, it is conceivable that in such an experiment indicating sudden increase in virulence the culture used may have been originally a bovine culture grafted upon the human subject and thereby attenuated. Such a culture would probably respond quickly to serial inoculations, whereas a true human type may not."

It is difficult to see why the increase of virulence in the human culture growing in the bovine body is any more improbable than the decrease of virulence of the bovine bacilli growing in the human body. Both hypotheses involve a marked variation of virulence, and such a variation is probably as likely to occur in one direction as in the other.

Hamilton and Young made a similar experiment, from which they conclude "that when tuberculosis from a human source has been ingrafted upon a calf it gains enormously in virulence by being reinoculated upon a second calf."

Arloing states that in the course of his investigations in 1884 and 1886 he increased the virulence of the material (tubercular) from certain surgical lesions by several successive passages through the guinea pig. In a certain number of cases this material, which at first infected only the guinea pig, finally became infectious for the rabbit. The most profound changes which he obtained were those which resulted from accustoming the bacilli to vegetate in the deeper layers of glycerine bouillon. The human bacillus, which before being accustomed to the bouillon produced tuberculosis in the rabbit and guinea pig by all the channels of inoculation, now presented special characteristics. It infected guinea pigs only with great difficulty, and very feebly by subcutaneous inoculation, and appeared without effect upon the rabbit when introduced by the same channel. Injected into the rabbit intravenously, however, it produced a kind of septicemic tubercular infection, fatal in two or three weeks, without apparent tubercular lesions in the lungs. One might believe it dispossessed of its tubercle-producing power, but if introduced into the peritoneal cavity of the rabbit in proper dose it caused an extensive tubercular eruption on the omentum and on points of the mesentery and intestinal folds. If propagated for a long time in bouillon by successive cultures, it may recover, without known cause, a small part of its old virulence and cause an eruption of very discrete and very small tubercles in the lungs.

The intravenous injection of this bacillus with calves does not give rise to the same appearances, but the effects are no less remarkable. In fact, these inoculations determine very extensive infiltrations of the lungs, which cause death in a few weeks.

A bovine bacillus of normal virulence was also accustomed to grow in the deeper parts of glycerine bouillon, and after a few generations in this medium its virulence became modified. It was still very fatal for sheep and goats, but had become remarkably harmless for calves. The lesions which it caused in the lungs were also modified. In place of the usual granular eruption, it produced with sheep and goats massive lobular infiltrations scattered here and there in the lungs, having a gray color and a sarcomatous appearance on section.

A very interesting experiment has recently been made by Mohler in the Bureau of Animal Industry. Two cows, Nos. 300 and 312, were inoculated subcutaneously with tubercle bacilli obtained from human sputum. The inoculations were made after testing with tuberculin by the injection in front of each shoulder of 2 c. c. of normal salt solution containing tubercle bacilli in suspension. One of the animals, No. 300, received in this manner bacilli which had been cultivated artificially for five generations upon dog serum without passage through any intermediate animal other than the guinea pig first used to isolate the bacillus from contaminating organisms in the sputum. The other cow, No. 312, was inoculated with material from the same source originally, but instead of continued growth in the incubator upon dog serum, it had been passed successively through a series of seven rabbits. An emulsion of the axillary gland of the last rabbit was used for the injection. The rabbits succumbed upon the eighty-second, thirty-third, fiftieth, twenty-first, fifty-eighth, thirty-fifth and thirty-sixth days, respectively, after inoculation—an average of 46.5 days.

As a result of this comparative test it was shown at the autopsy of these cattle, held, respectively, 158 and 159 days after inoculation (both animals having been chloroformed), that the bacillus in the first instance had failed to produce any lasting tubercular lesion whatever, the autopsy being absolutely negative. The lesions present in the second animal, however, indicated that marked increase in virulence had occurred from the repeated passage of the tubercle bacillus through rabbits.

The clinical notes show that the animal's temperature had risen from an initial of 102° F. to 106° F. on the fourteenth day after inoculation, and that acceleration of respiration was noticeable. The temperature gradually receded, although it was variable from day to day. Later observation showed that there was at each point of inoculation a firm, hard tumor involving the adjacent prescapular gland. The autopsy showed on the right side at the point of inoculation a tumor the size of a hickorynut full of thick, yellowish pus. At the opposite seat of injection there was a tumor the size of a hen's egg full of caseous material and surrounded by an inflammatory area of granulation tissue. The right and left prescapular glands were enlarged and contained numerous foci of calcareous matter. The lungs contained twelve or more scattered grayish tubercular foci. The anterior and posterior mediastinal lymph glands were greatly enlarged and thickly studded with calcareous tubercular areas. The bronchial glands were the size of pigeon eggs and gritty on section. The liver contained some fifteen tubercular foci, both superficial and deep. The retropharyngeal, submaxillary, prepectoral, and portal lymph glands all contained small tubercular foci, and there were inflammatory fibrous neoplasms on the costal and diaphragmatic pleura and the omentum.

We have here a case of tuberculosis in a bovine animal produced by sputum bacilli, and the virulence of these sputum bacilli had been increased by passage through a series of rabbits, since other bacilli from the same source which had not been passed through rabbits failed to produce any disease when similarly inoculated upon a bovine animal.

Mohler has made similar studies with other culture of bacilli which were obtained from the human subject, but which had morphological and cultural peculiarities similar to those of bovine bacillus, although it only produced local lesions in cattle. This bacillus was passed through a series of five cats, and was then found to be completely changed in its morphological appearance, the rods being elongated, slender, more or less beaded, and entirely of the human type. But far from decreasing in virulence, as might be expected from its morphological appearance, this bacillus had so increased in its pathogenic activity that it now produced generalized tuberculosis in a cow. This cow was inoculated subcutaneously in front of each shoulder with 2 c. c. of a salt solution emulsion of the tuberculous omentum of the last cat of the series. The cow rapidly lost flesh; had a temperature of 104° F., with the point of inoculation and adjacent glands greatly swollen. The autopsy revealed generalized tuberculosis, involving the lungs, mediastinal glands, spleen, liver and kidneys.

Other cultures of the tubercle bacillus obtained from the mesenteric glands of a sheep, a hog and a cow, when recovered from their original source and grown on dog serum, conformed to the bovine type in every particular, but after passage through several cats and recovery on dog serum a striking change was observed in their morphology, since they then showed elongated and slender rods more or less beaded and undistinguishable from the human bacillus. That there was no decrease in the virulence is indicated by the fact that the last cat in the series succumbed in a shorter period of time than the most of the cats in the same series, and always in less time than the average duration of life shown by the preceding animals of the series.

THE SIGNIFICANCE OF TYPES AMONG TUBERCLE BACILLI.

The successful results of experiments made with a view of modifying the virulence of tubercle bacilli obtained from different sources and having different degrees of activity are now so numerous, so positive, so concordant, that it is impossible to explain them away by the hypothesis of accidental contamination or by the suggestion that the cultures used had an origin different from what was supposed. Beginning with reciprocal transformations of the avian, mammalian, piscine, and amphibian bacilli, investigators have attacked the types which are less clearly defined, such as the human and bovine types, and have both reduced and increased their virulence for certain species of animals, and have modified their morphological appearance to such an extent that it is no longer possible to identify them by their form. What, then, is the significance of the word "type" as applied to tubercle bacilli of human, bovine, porcine, or canine origin? Is it not merely an aggregation of temporary characteristics which have been acquired as the result of the vegetation of the bacillus for a time under certain definite conditions of environment?

When the differentiation of human and bovine bacilli was first undertaken the characteristic made most prominent was the much greater virulence for cattle of bacilli of bovine origin. It has since been proven, however, that bacilli equal in virulence to those of bovine origin have been obtained from the human subject, and it has also been proven that bacilli of no greater virulence than the average human bacillus have been obtained from the bovine subject.

According to Kossel the German Tuberculosis Commission recognized three degrees of virulence in seven cultures which it tested from cattle and hogs, and it also recognized four degrees of virulence in thirty-nine cultures from human sources. It is evident, therefore, that no specific degree of virulence can be defined as absolutely characteristic of either the human or the bovine bacillus. The most that we can say is that the greater part of the bovine bacilli are much more virulent for cattle, sheep, goats, rabbits, and perhaps some other animals, than are the greater part of the human bacilli. The investigations thus far made would seem to indicate that there are all gradations of virulence among tubercle bacilli of bovine origin as well as among those of human origin.

Another characteristic which was named with considerable confidence as a distinguishing feature was the morphological appearance of the rods when grown upon dog serum. Bacilli have been obtained from the human subject, however, which had the exact morphology that had been attributed to the bovine bacilli, and bovine bacilli have been changed by passing them through cats so that they acquired the morphology of the human bacilli. The length and breadth of the rods vary as they are found in the lesions of the same subject; bacilli of the same source vary greatly according to the medium upon which they are grown, and the individual rods of the same culture and growing upon the same medium also vary. While the greater part of the cultures from human sources which have been grown upon dog serum for a considerable time show rods which are longer and thinner than those of most cultures similarly made from bovine sources, there are notable exceptions to this rule.

Of the cultural characteristics about the same thing may be said. The most of them are far from constant, as may be noted, especially if we compare a number of bovine cultures and a number of human cultures each from a different subject. The reaction test of the culture medium which has recently been proposed has not been investigated sufficiently to enable one to form an opinion as to its accuracy. There appears, *a priori,* to be no more reason to expect constancy in this character than in the others which have been suggested as a means of discriminating between bacilli from different sources.

It is undoubtedly true that tubercle bacilli tend to the production of different types corresponding to the medium upon or within which they are grown and to the conditions of environment to which they are subjected, and it is therefore to be expected that vegetating in any given animal species for a time they will present some special characteristics. These characteristics may be valuable in many cases as indicating the origin of a given culture, but they cannot be properly regarded as fixed and unchangeable, nor as indicating that such types are pathogenic only for the particular species of animal from which the type was obtained.

THE TRANSMISSION OF ANIMAL TUBERCULOSIS TO MAN.

Basing their conclusions upon the failure of the inoculations made by them to produce tuberculosis in bovine and other large animals with cultures of the human bacillus, and upon the morphological and cultural differences above referred to, some investigators have held that human tuberculosis differs from bovine, and cannot be transmitted to cattle, and that, on the other hand, it is doubtful if bovine tuberculosis can be transmitted to man. In order to reach these conclusions it was necessary to ignore the very positive results of Chauveau in infecting cattle with human tuberculosis and those of other experimenters who produced less extensive lesions in the inoculated animals. It was also necessary to put aside the clinical evidence of the infection of man with bovine tuberculosis, which, while not absolutely conclusive, was yet very strong, particularly the cases of accidental inoculations; and, finally, it would appear that the successful inoculations of mammalian tuberculosis upon birds, fishes and amphibians, and the counter-inoculations of avian, piscine, and amphibian tuberculosis upon mammals, had been lost sight of, or the authors in question would have been more cautious in putting forth such hypotheses; for surely, if the disease was transmissible between such widely-separated species as human and carp, it would be hard to believe that it could not be transmitted from human to bovine.

Since Koch's paper was read before the British Congress on Tuberculosis in 1901 numerous investigators have taken up this question, and it has been shown conclusively that tubercle bacilli from the human subject may be so virulent as to produce generalized tuberculosis in cattle even when inoculated subcutaneously. It is not necessary for me to enter into details concerning the various experiments conducted by Vagedes, Ravenel, De Schweinitz, Mohler, De Jong, Delépine, Stenström, Fibiger and Jensen, Nocard, Max Wolff, Arloing, Behring, Dean and Todd, Hamilton and Young, the German Tuberculosis Commission, and by Theobald Smith, all of whom have succeeded in causing generalized tuberculosis in cattle by inoculation with bacilli of human origin. The German Commission, in testing thirty-nine human cultures, found four of these to be very virulent for cattle, which is approximately 10 per cent., but all of these cultures were included in the sixteen which were obtained from children, so that of the cultures from children tested 25 per cent. were virulent for cattle. The experiments of the above-mentioned investigators at once and forever disprove the conclusion that tuberculosis cannot be transmitted from the human subject to cattle, but the question has been raised as to whether this virulent tuberculosis obtained from man is really of human origin or whether it is bovine tuberculosis which has been grafted upon the human subject. If it be admitted that this is human tuberculosis, then it follows that cattle are susceptible to human tuberculosis, and the principal argument that has been used to show that bovine tuberculosis is not communicated to man falls to the ground. If, on the other hand, it be admitted that the subjects from which these virulent cultures were obtained were affected with bovine tuberculosis, then it follows, without further argument, that the tuberculosis of animals is an important factor in the causation of human tuberculosis.

It has been my object to impress upon you so far as I could in the brief time at my disposal how widely the disease which we know as tuberculosis is distributed in nature; how it has been observed in fishes, frogs, lizards, snakes, turtles, birds, and in a great variety of mammals; how it may be transmitted artifically from any one of these creatures to another far removed from it in the zoölogical scale; how the morphology and cultural characteristics of the bacilli from these different sources, though in many respects they show great variations, may be modified almost at the will of the experimenter by gradual adaptation to other animal organisms or to other conditions of environment; how different degrees of virulence and different morphological characteristics have been found which form a series of intermediate grades between the most virulent bovine bacilli and the most attenuated human bacilli; how the virulence of bacilli from human sources has been increased by passage through rabbits, cats and calves until in each case it became very active for bovine animals, and how the test of inoculating bovine animals with bacilli from human sources has shown that a considerable proportion of such bacilli produce generalized tuberculosis in these animals, and thus exhibit a virulence which is not to be distinguished from that of tubercle bacilli from bovine sources. As a result of all this work we are looking at tuberculosis more and more from the point of view of general pathology; in other words, we are taking a broader view of these questions, and the little barriers which were raised to form a dividing line between human and bovine tuberculosis are melting away. We see one tuberculosis, one tubercle bacillus, with infinite variations, according to its habitat, whether that habitat is an artificial culture medium or an animal organism, and, notwithstanding these variations, a bacillus which is always essentially the same, and one which may at any time, if given suitable conditions, retrace its steps and recover the properties which it possessed before the variations occurred.

Now a word as to the practical lessons which we should obtain from these scientific investigations. A great and successful effort is being made to reduce the suffering and mortality which results from human tuberculosis. Rooms occupied by consumptives are disinfected, the sputum is destroyed, expectoration in public places and on the sidewalks is prohibited, sanatoria are being established where those afflicted with the disease may be properly treated without endangering other members of the community, and so, one by one, the channels of infection between man and man are being brought under control or abolished. The good effects of this work are already seen in the reduction of the mortality from tuberculosis in the places where it has been going on. But why should we ignore the channels of infection between animals and man? There is a tremendous amount of tuberculosis in cattle, particularly in milch cows and in pigs, and the infrequency of the disease in these animals is increasing from year to year. Why should we continue to allow milk to be sold and to use it ourselves if it is produced by herds where 50 to 90 per cent. of the cows have tuberculosis? Why should we continue to allow tuberculous animals to be slaughtered practically without supervision in numerous abattoirs and the meat sold for human consumption without restriction?

There are two answers to these questions. The first is that the work is progressing along the lines of least resistance, and the second is that the medical profession has never appreciated, and does not now appreciate, the importance of animal tuberculosis as a factor in the production of human tuberculosis. This fact is as plain as the noonday sun to anyone who has watched the development of medical sentiment, as I have, for nearly a third of a century. When the experiments of Villemin demonstrated the infectiousness of tuberculosis, and veterinarians called attention to the danger of infection from animal sources, some twenty-five years ago, we were told that tuberculosis was plainly an hereditary disease, and that if it was infectious from man to man or from animals to man there would be plenty of clinical evidence to that effect. But time ran on, the bacillus tuberculosis was discovered, and the profession reversed its theory that tuberculosis was exclusively the result of hereditary influence. It was soon seen that the problem of controlling this disease, which before had been hopeless, was now comparatively plain, at least so far as principles of administration were concerned. And there were many who wondered why it had taken so long to discover clinical evidence demonstrating the infectiousness of the disease between man and man when such cases had been occurring everywhere in abundance from time immemorial.

There has been almost to the present moment just as strong a prejudice against the theory of infection from animal sources as there was formerly against the theory of infection from human sources. Clinical evidence indicating infection from animals has been ignored, explained away, or summarily rejected, just as similar evidence as to infection from man to man was disposed of before the discovery of the tubercle bacillus. And as the evidence of infection from animals multiplied and could be no longer entirely ignored the attempt was made to neutralize it or hold it in check by the erection of scientific barriers. The promulgation of the idea that human tuberculosis was not transmissible to cattle and that human and bovine bacilli were distinct types, with well-defined characteristics, started this movement, which culminated at London in 1901 with Koch's memorable address before the British Congress on Tuberculosis. In that address he took the most radical position in advancing the difference between human and bovine tuberculosis and the improbability of the disease being transmitted from animals to man. Since that time, as has already been shown, the conclusions from his experiments have been demonstrated to be incorrect; the disease has been again and again transferred from man to animal, and bacilli of the bovine type have been frequently found in the lesions of the human subject. What are we going to do now? Will we try to find some other reasons for neglecting our plain duty in this matter, or will we try to control this source of infection as well as the other sources?

The frequent infection of the human subject with animal tuberculosis appears to be established by the scientific investigations to which reference has been made. It is notable that most of the cases having bacilli of the bovine type have occurred in children. Each of these cases forms a new center of tuberculosis infection. And it is to be remarked that these bacilli of the bovine type are pathologically very active; they are more virulent for most animals and probably more virulent for man than are the bacilli of the human type. Therefore it appears that these new centers of tuberculosis may be the means of keeping up the activity and virulence of the disease in man. It is a striking fact that human bacilli are generally much more saprophytic in their characters and far less virulent than those of most other mammalian sources, and it seems that the human organism has the power of attenuating these bacilli and gradually making them less and less harmful. But this influence for good must be continually counteracted by the infusion of extremely pathogenic germs from animal sources.

It is not my purpose to discourage in the least any of the efforts being made or contemplated for limiting the danger of infection from the tuberculous human patient, but I insist that it is also the sanitarian's duty to guard against infection from tuberculous animals.

MARYLAND
MEDICAL JOURNAL

A Journal of Medicine and Surgery.

Vol. XLVII—No. 3 BALTIMORE, MARCH, 1904 Whole No 1030

PULMONARY CONSUMPTION AND THE POSSIBILITY OF ITS ERADICATION THROUGH THE COMBINED EFFORTS OF A WISE GOVERNMENT, WELL-TRAINED PHYSICIANS AND AN INTELLIGENT PEOPLE.

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ADDRESS DELIVERED AT M'COY HALL OF THE JOHNS HOPKINS UNIVERSITY, UNDER THE AUSPICES OF THE BALTIMORE (MD.) TUBERCULOSIS EXPOSITION, JANUARY 28, 1904.

Mr. Chairman, Ladies and Gentlemen:

The Tuberculosis Exposition, which is the occasion of our gathering here in Baltimore, marks an epoch in the history of the anti-tuberculosis crusade in America. The State of Maryland, the city of Baltimore, and all the other promoters of this truly great and humanitarian enterprise are to be congratulated on their success. To be permitted to address on this occasion an audience composed of physicians, hygienists, sanitarians and laymen, who by their very presence here show their deep interest in this great medical and social problem—the eradication of tuberculosis—is a privilege which, I assure you, I appreciate highly.

When my distinguished friend, Professor Osler, extended to me this flattering invitation, he told me to make my talk semi-popular or popular. This would be, of course, very well for so great a scholar and practical teacher as Dr. Osler, but to the average physician this is not so easy a thing. In fact, not everyone has the gift to speak the language of science in the language of the people, and thus if I fall short in my task I ask your indulgence.

As my title indicates, I am to speak on consumption, or pulmonary tuberculosis, and the possibility of its eradication. By eradication I mean, of course, how to prevent and how to cure the disease, with the ultimate object of causing it to practically disappear. In order that I may suggest to you my thoughts on how to proceed to attain this goal, it will be necessary to give you first a general idea of the character and the peculiarities of the disease.

Pulmonary tuberculosis, or consumption, is a chronic, infectious and communicable disease, caused by the presence of the tubercle bacillus, or germ of consumption, in the lungs. The disease is locally characterized by countless tubercles, that is to say, small rounded bodies, visible to the naked eye. The bacilli can be found by the million in the affected organ. It is this little parasite, fungus, or mushroom, belonging to the lowest scale of vegetable life, which must be considered as the specific cause of all tuberculous disease. This parasite, not only gradually destroys the lung substance through ulcerative processes, but at the same time gives off certain poisonous substances, called toxins, which give rise to various, and often serious, symptoms.

The important symptoms of pulmonary tuberculosis are cough, expectoration, fever, difficulty in breathing, pains in the chest, night-sweats, loss of appetite, hemorrhages and emaciation. In the matter expectorated it is often possible to find the tubercle bacillus with the aid of the microscope and certain coloring matters. It appears in the form of small, slender rods.

How may this germ of consumption enter the human system? There are really three methods whereby this germ may enter—namely, by inhalation, that is, being breathed into the lungs; by ingestion, that is, being eaten with tuberculous food; and by inoculation, that is, the penetration of tuberculous substances through a wound in the skin.

Let us treat first the most frequent method of the propagation of tuberculosis—namely, that arising from the indiscriminate deposit of the tuberculous sputum. A consumptive individual, even at a period when he is not confined to his bed, may expectorate enormous quantities of bacilli. Now, if this expectoration, or spittle, is carelessly deposited here and there so that it has an opportunity to dry and become pulverized, the least draft or motion in the air may cause it to mingle with the dust, and the individual inhaling this dust-laden atmosphere is certainly exposed to the danger of becoming tuberculous if his system offers a favorable soil for the growth of the bacilli. By "favorable soil for the growth of the bacilli" must be understood any condition in which the body is temporarily or permanently enfeebled. Such a condition may be inherited from parents or acquired through alcoholism or drunkenness or other intemperate habits, through privation, or disease.

Besides the danger arising from carelessly-deposited sputum, or spittle, the inhalation or ingestion of small particles of saliva which may be expelled by the consumptive during his so-called dry cough, when speaking quickly or loudly, or when sneezing, must also be considered as dangerous for those who come in close contact with the invalid. These almost invisible drops of saliva may contain tubercle bacilli. Recent experiments in this direction have shown the possibility of infection by this means.

The next most frequent method of the propagation of tuberculosis is through the ingestion of the bacilli—that is to say, when the germ of consumption is taken with the food.

The third, and much less frequent, way of the cause of tuberculosis is the inoculation or penetration of the tuberculous substance through the skin.

What should we do to stop the first and most frequent source of the dissemination of the bacillus?

A patient suffering from pulmonary consumption should know that, no matter in what stage of the disease he may be, his expectoration, or spittle, may spread the germ of the disease if the matter expectorated is not destroyed before it has a chance to dry and become pulverized. The patient should, therefore, always spit into some receptacle intended for that purpose. It is best to have this vessel made of metal, so as not to break. It should be half filled with water or some disinfecting fluid, the main thing being to make it impossible for the expectoration to dry.

In factories, stores, railroad cars, waiting rooms, court rooms, restaurants, saloons, meeting places, theatres, menageries—in short, wherever many people congregate—there should be a sufficient number of cuspidors, well kept and regularly cleaned. They should be made of unbreakable material and have wide openings. If such measures are carried out, there will be no excuse for anyone to expectorate on the floor and thus endanger the lives of his fellow-men.

When outdoors the patient should use a pocket flask of metal, strong glass or pasteboard. There are numerous kinds of flasks in the market and I show you here a few of them.

A handkerchief should never be used as a receptacle for sputum. Patients who are too sick to make use of light porcelain or aluminum cups should have a number of moist rags within easy reach. Care should be taken that the rags always remain moist and that the used ones are burned before they have time to dry. The paper spit-cups, with their contents, should, of course, also be destroyed by fire.

There will always be some consumptives who cannot be persuaded to use the pocket flask, for the simple reason that they do not wish to draw attention to their malady. The only thing for these people to do is to use squares of soft muslin, cheesecloth, cheap handkerchiefs or Japanese paper handkerchiefs specially manufactured for that purpose, which can be burned after use. They should also place in their pockets a removable lining of rubber or other impermeable substance which can be thoroughly cleaned. This additional pocket could be fastened to the inside of the ordinary pocket by clamps, and would thus be of no inconvenience to the patient. A pouch of vulcanized rubber or an ordinary tobacco pouch may be used in place of the extra pocket of impermeable material.

The danger of dissemination of the bacilli through the so-called dry cough is relatively small. We should, however, nevertheless insist that the patient hold a handkerchief before his mouth or nose when he coughs or sneezes. The consumptive should be advised to carry two handkerchiefs with him—one to hold before his mouth and to wipe it with after having expectorated; the other to use only to wipe his nose. By being careful with the use of his handkerchiefs the danger of infecting his nose and bronchial tubes will be materially lessened.

All dirty linens (sheets, pillow-cases, underwear, napkins, handkerchiefs, etc.) used by the consumptive should not be handled more than necessary, but should be placed in water as soon as possible after removal from bed or body. It is better to wash these articles separately, and only after having been thoroughly boiled should they be put with the common laundry. Whenever it is not possible to carry out these precautionary measures in their entirety, one should strive to follow them as far as it is in one's power.

Against the danger from infection through tuberculous food we will say that whenever one is not reasonably certain that the meat he eats has been carefully inspected and declared free from disease germs, it should be very thoroughly cooked. By this means one is certain to kill all the dangerous micro-organisms. Against the sale of tuberculous milk there are very excellent laws in some States of the Union, which are rigorously enforced. In some the laws are less good, and in some there are no laws at the present time.

In justice to farmers and dairymen it must, however, be said that there are many who do their very best to protect themselves and their fellow-men from the danger of tuberculosis. They have their cows tested regularly, destroy the animals which are found to be tuberculous, and keep their stables and utensils for milk as clean as possible.

Unless one can be reasonably sure that the cows from which the milk is derived are healthy, and not tuberculous, the milk should be boiled or sterilized before use, especially when it is intended as food for children. Milk obtained from stores and from milk peddlers should invariably be submitted to boiling or sterilization. When milk is kept slowly boiling for five minutes all the bacilli are killed, and the same result is obtained by the sterilizing process —that is to say, to keep the milk heated for at least half an hour at a temperature of about 70° C. or 160° F. There are now in the market a number of cheap and practical apparatuses for sterilizing milk which can be obtained at almost any drug store.

Raw fruit bought from the pushcart man, or, for that matter, derived from any other source, should be washed, peeled or cooked before being eaten.

There is another possibility whereby the germs of consumption may enter our stomach or intestines—namely, through kissing the consumptive or using utensils which have been soiled by the saliva of the patient. Therefore, the consumptive should never kiss, no matter whom, on the mouth, and children should be taught not to allow anyone to kiss them, except on the cheek, or not at all.

Tuberculous patients should have their own drinking glasses, spoons, forks, etc., or, at least, all table utensils which have served the tuberculous patient should be sterilized in boiling water after use.

It is, of course, also possible that the consumptive may contract intestinal tuberculosis when he, out of false modesty, swallows his expectoration. He should also remember never to touch food before having washed his hands very thoroughly. Even with the greatest care it is possible that he may have soiled his hands with tuberculous expectoration.

Inoculation, or the penetration of tuberculous substance through the skin, happens perhaps most frequently through injuries received while cleaning nickel or chipped glass or porcelain cuspidors which had been used by consumptives. It is also possible for the bacilli to enter the circulation if the person cleaning the spittoons happens to have a wound or open sore on his hands. Persons entrusted with the care of the spittoons in a private home or in an institution for consumptives should wear rubber gloves while cleaning these vessels.

At times the patient may inoculate himself by placing an accidentally-injured finger in his mouth or by carelessly soiling an open wound with his expectoration.

Physicians, students of medicine or veterinary science, butchers, etc., are also exposed to the danger of wounding themselves with instruments which may have come in contact with tuberculous matter. Extreme care is the only remedy for all persons thus exposed.

If one has been unfortunate enough to receive an injury, and tuberculous inoculation is feared, the best thing to do is to let the would bleed freely, wash it thoroughly with water that has been boiled with a 5 per cent. solution of carbolic acid, or with pure alcohol; dress the wound with a clean rag dipped in any of these liquids, and seek as soon as possible the advice of the physician.

I have thus far only spoken of tuberculosis which manifests itself in the pulmonary form—that is to say, consumption of the lungs; of intestinal tuberculosis—that is to say, consumption of the bowls, and tuberculosis of the skin, or lupus. But you must know that every organ in the body, such as the throat, the bones, and the covering of the brain and spinal column, are also not infrequently invaded by the tubercle bacillus. In the latter form the disease is technically called tuberculous meningitis.

After all that you have heard so far of the contagiousness, or, rather, the communicability of tuberculosis, and consumption in particular, I do not wish you to think that a breath in an atmosphere accidentally laden with bacilli would certainly render a healthy individual consumptive, or that by a swallow of tuberculous milk or a little injury from a broken cuspidor one must necessarily become tuberculous. The secretions of our nasal cavities, doubtlessly also the blood, and the secretions of the stomach of the healthy individual have bactericidal properties—that is to say, they kill the dangerous germs before they have a chance to do harm. Therefore the healthy man and woman should not have an exaggerated fear of tuberculosis, but they should, nevertheless, not recklessly expose themselves to the danger of infection.

But who are the individuals who must be particularly careful so as not to be attacked by the almost ever-present tubercle bacillus?

There are four classes—first, those who have a hereditary predisposition to consumption; secondly, those who have weakened their system and thus predisposed themselves to consumption by the intemperate use of alcoholic beverages, by a dissipated life, by excesses of all kinds, etc.; thirdly, those whose constitution has been weakened through disease—for example, pneumonia, typhoid fever, smallpox, measles, whooping-cough, syphilis, influenza, etc.; fourthly, those whose occupations, trades or professions, such as printing, hat making, tailoring, weaving, and all occupations where the worker is much exposed to the inhalation of various kinds of dust, have rendered them particularly liable to consumption.

Before I proceed to give you a few of the essential points how to overcome such a predisposition to consumption, let me answer the question which I believe to read in the minds of many who honor me by their presence here—namely, what about those who have a hereditary consumption? Permit me to say that the popular notion concerning hereditary consumption is, in my humble opinion, absolutely erroneous. Consumption has, perhaps, never been inherited either from the father or the mother, but the child has usually been infected by its well-meaning but ignorant consumptive parents after birth.

The most common modes of infection during early childhood are perhaps the following: The consumptive mother caresses the child and kisses it on the mouth; she prepares the food, tasting it to judge its temperature and flavor through the same rubber nipple or with the same spoon the child uses, and thus unconsciously conveys the germs of the disease from her own mouth to that of the child. Later on the child will play on the floor in the room, and should there be a consumptive in the family who, from carelessness or ignorance, is not prudent in the disposal of his expectoration, the child is indeed likely to be infected. The little one while playing on the floor may with great facility inhale the bacilli floating with the dust in the air, and can thus acquire tuberculosis by inhalation, the full development of which may only take place in later years when the origin will not be thought of. Again, the little child touches everything it can take hold of, infecting its fingers thoroughly, and by putting them in its mouth may cause tuberculosis by ingestion, which will gradually develop into consumption of the bowels. Lastly, should the child's nails be neglected, it may scratch itself with the infected fingers and thus inoculate its system with the disease. Tuberculosis of the skin, or lupus, may result from such an unfortunate accident.

Even later on, when the child goes to school, the danger of contracting tuberculosis is not removed. The child may become attached to a little consumptive companion, and they will kiss each other when going or coming from school; or, again, the infection may result from the not unusual practice of swapping apple cores, candy, chewing-gum, etc.

To prevent these modes of infection during childhood is certainly possible by taking the following precautions: Not only should consumptives be religiously careful with their expectoration, but they should associate as little as possible with young children, and stay away from playrooms and playgrounds. We repeat that to kiss children on the mouth should never be allowed, and the little ones should be taught never to kiss and be kissed by strangers. They should be kissed by their own friends and relatives as little as possible, and then only on the cheeks. The floor on which the child plays should be kept scrupulously clean. Fixed carpets in such a place are an abomination; they only serve as dust and dirt collectors, and not infrequently harbor the germs of contagious diseases. The hands and nails of little children should be kept as clean as possible. Expectorating on playgrounds should be considered a grave offense and should be punished accordingly. These playgrounds should be kept clean and as free from dust as possible, being daily strewn with clean sand or gravel.

To protect the child from contracting tuberculosis during school life we must have the co-operation of the teacher and superintendent of public and private schools, and even kindergartens. If I had my way, I would have all the school children provided with a little leaflet of instructions, which would read about as follows:

Do not spit, except in a spittoon or a piece of cloth or a handkerchief used for that purpose alone. On your return home have the cloth burned by your mother, or the handkerchief put in water until ready for the wash.

Never spit on a slate, floor, sidewalk, or playground.

Do not put your fingers into your mouth.

Do not pick your nose or wipe it on your hand or sleeve.

Do not wet your fingers in your mouth when turning the leaves of books.

Do not put pencils into your mouth or wet them with your lips.

Do not hold money in your mouth.

Do not put pins in your mouth.

Do not put anything into your mouth except food or drink.

Do not swap apple cores, candy, chewing-gum, half-eaten food, whistles, bean-blowers, or anything that is put in the mouth.

Peel or wash your fruit before eating it.

Never cough or sneeze in a person's face. Turn your face to one side and hold a handkerchief before your mouth.

Keep your face and hands and finger-nails clean; wash your hands with soap and water before each meal.

When you don't feel well, have cut yourself, or have been hurt by others, do not be afraid to report to the teacher.

In schools where slate or lead pencils are given to the children and collected after school hours, these articles should be disinfected before they are again distributed to the pupils. Not only the spread of tuberculosis, but far more contagious diseases, such as measles, diphtheria and scarlet fever, may be prevented among school children by this simple precaution. The custom in vogue in some schools to have every child use a suitable envelope, so as always to have the same pencil, while preferable to no precaution at all, is, in my opinion, not nearly as safe as a thorough disinfection.

I have said that consumption is not hereditary, and children born of consumptive but intelligent and conscientious parents need not necessarily contract the disease. I myself have seen children of a consumptive parent grow up to be strong men and women, but their parents were not only careful, clean and conscientious; they were also aware that, while they did not transmit consumption to their children, they did transmit to them a tendency or predisposition to this disease. This hereditary predisposition is, however, a condition which can be overcome by judicious training, proper food, plenty of outdoor exercises, and the avoidance of all excesses. Predisposed individuals should dress sensibly and according to the season. Never should they wear garments which restrict circulation or hinder the free physiological function of the chest or abdomen. Tightly-laced corsets, tight neckwear, tight shoes, are all pernicious and particularly dangerous to the individual predisposed to tuberculosis.

A predisposition, whether inherited or acquired, may be explained as a peculiar weakened state of the system which offers a favorable soil for the growth and multiplication of the germs of consumption. I have already said what should be the duty of the parents if they are themselves consumptive and fear to have transmitted to their offsprings a predisposition to the disease.

Concerning alcoholism and other intemperate habits, which are so often the forerunners of consumption, I desire to speak plainly. I do not wish to appear to you as a temperance lecturer, condemning all and everything which does not subscribe to the doctrines of the temperance party. I consider alcohol a medicine, at times indispensable in the treatment of certain diseases; but liquor as a beverage is never useful and nearly always harmful. Alcoholism must be considered the greatest enemy of the welfare of a nation, the most frequent destroyer of family happiness, the cause of the ruin of mind, body and soul, and certainly the most active co-operator of the deadly tubercle bacillus.

To combat alcoholism (drunkenness or intemperance) education, above all, is required. Extreme prosecution and fanatical laws will do little good. From early childhood the dangers of intemperance and its fearful consequences should be taught. In schools and at home the drunkard should be pictured as the most unhappy of all mortals. While the very moderate use of feeble alcoholic drinks, such as light beers, may be considered as harmless to adults when taken with their meals, alcohol should never be given to children, even in the smallest quantities.

In families in which there is a fear of hereditary transmission of the desire for strong drink, even the mildest alcoholic drinks should be absolutely avoided. It would also be best if all people so predisposed, or who may have acquired only the occasional desire for drink, would never smoke, for experience has taught that attacks of dipsomania (periodical sprees) are often caused by an excessive use of tobacco. The young man starting out in life should take with him the moral training which will enable him to be a gentleman, and be considered a polite gentleman, though he absolutely refuses ever to enter a liquor saloon in order to treat or be treated to drink. It is this treating habit—alas! so prevalent in our American society—which has ruined many a young man and made him a moral and physical wreck. The creation of tea and coffee houses, where warm, non-alcoholic drinks, including bouillon, are sold in winter and cool ones in summer, are to be encouraged. It would be of additional advantage if some of these houses could also offer healthful amusements for old and young. Temperance societies, which, through tactful and intelligent propaganda, help to combat the fearful evil of alcoholism, should receive encouragement from everybody.

There is another point in regard to alcohol and tuberculosis I wish to emphasize, and that is the idea that alcohol is a remedy, or even a specific remedy, for consumption. There has never been a greater mistake made. Alcohol has never cured and never will cure tuberculosis. It will either prevent or retard recovery. It is like a two-edged weapon—on one side it poisons the system, and, on the other side, it ruins the stomach and thus prevents this organ from properly digesting the necessary food. Truly pathetic are the results of this erroneous doctrine in the families of the poor, where, instead of procuring good nourishment for the invalid, liquor has been bought in far too large quantities, so that often there was not enough money left for food for the sufferer nor for the other members of the family.

The individual enfeebled by disease, such as typhoid fever, grippe, etc., should lead a particularly careful life, and avoid crowded meeting places and all localities where the air is vitiated and where he is in danger of coming in contact with careless or ignorant individuals who expectorate everywhere. The man who has a trade, such as the printer, tailor, book-keeper, or other workers whose occupations are more or less predisposing to tuberculosis, can render their work relatively healthful by leading a sober life and, when not at work, spending as much time as possible in the open air, by breathing deeply, and keeping the body in a thoroughly good condition through regular bathing and judicious exercise.

I believe I have now said all I could, in the brief space of time allotted to me, of the duties of the consumptive, of those living with him, of those who are in fear of becoming consumptive, and of the parents who may have transmitted to their children a predisposition to the disease. The duty of the individual who is not included in these four classes is to make himself acquainted with the facts stated. Everyone, whether he is consumptive or lives with consumptives or has nothing whatsoever to do with consumptives, should know the few principal sources for the propagation of the disease and the means to combat them. It should be known to everyone that consumption is an infectious, communicable, preventable and curable disease, and that in the early stages the cure is often accomplished as many as seventy-five to eighty-five times out of a hundred. What is most interesting to know is that this cure cannot only be accomplished in California or Colorado, but also in our own home climate—not, however, by quacks and patent medicines, but by the scientific and judicious use of fresh air, sunshine, water, abundant and good food (milk, eggs, meat, vegetables, fruit), and the help of certain medicinal substances when the just-mentioned hygienic and dietetic means do not suffice in themselves to combat the disease.

The thorough and constant supervision of the pulmonary invalid, the immediate intervention when new symptoms manifest themselves or old ones become aggravated or do not disappear rapidly enough, the prescribing of proper food and drink, can only be done by the thoroughly-trained physician either in the home of the patient or in a properly-conducted sanatorium.

On everyone with the knowledge of the prevention of consumption which he may have possessed already, or which I may have been fortunate enough to convey to him, I think it my duty to impress the fact that he can do something toward the combat of the disease.

If you are in the presence of a consumptive who is not yet under medical care, teach him what you know of the prevention of the disease and advise him to seek the counsel of a competent physician. If he is too poor to pay for a consultation and too proud to ask it for nothing, tell him to apply to the Health Department, which will send him one of its physicians without cost. No tuberculous invalid, no matter in what stage of the disease, whether living in a palace or in the poorest tenement house, should be without a medical adviser. If you meet a consumptive who is ignorant of the precautions he should take, do not shun him like a leper, but treat him with kindness and convince him that whatever he does to prevent the spread of the disease among others will also improve his own condition and increase the chances of his recovery.. Let me tell you that a clean, conscientious consumptive is as safe a person to associate with as anybody. If in your daily life you can influence others to make themselves familiar with the necessary knowledge of the prevention of tuberculosis, do so. If, through your influence, your words and example, you can combat this fearful curse of our nation—alcoholism—I beseech you do your duty.

Another subject which must be spoken of is a rather peculiar affliction in itself and concerns everybody. I refer to phthisiophobia, which means a morbid or exaggerated fear of the presence of a consumptive. Alas! it has to come to a point where phthisiophobia is not confined to a few individuals, but where we must speak of official, private, and even professional phthisiophobia. Official phthisiophobia started in the United States about two years ago, when the surgeon-general of the Marine Hospital Service issued a declaration that pulmonary tuberculosis must be classed as a dangerous contagious disease, and that in future immigrants or aliens visiting our shores afflicted with pulmonary tuberculosis must be debarred from all ports of the United States. In June of last year an order was issued confirming the above decision, and adding that tuberculous individuals should be debarred regardless of boards of special inquiry, which heretofore had used their discretion in the matter.

It goes without saying that none of us desires pauper immigration, and we do not want any such class to enter our country, whether they are tuberculous or not. The question here is simply, is it right, just and scientific to declare pulmonary tuberculosis a dangerous contagious disease, and exclude on that account worthy immigrants who offer a guarantee that they will not become a burden to the community, or to exclude aliens and visitors afflicted with pulmonary tuberculosis?

To show you the spirit with which the bulk of the American medical profession protested against this action on the part of the Federal Government permit me to copy here the resolutions which were passed by the New York Academy of Medicine on February 6, 1902:

WHEREAS, The Treasury Department of the United States, upon recommendation of the surgeon-general of the Marine Hospital Service, has recently decided to classify pulmonary tuberculosis with dangerous contagious diseases, be it

Resolved, That the New York Academy of Medicine deeply deplores this decision, which is not based on either clinical experience or on scientific experiments. Be it further

Resolved, That the academy considers the exclusion of non-pauper tuberculous immigrants and consumptive aliens visiting our shores unwise, inhumane and contrary to the dictates of justice. Be it further

Resolved, That while the academy is convinced of the communicability of tuberculosis and urges all possible precautions against the spread of the disease occasioned by sputum and tuberculous food, the academy is opposed to all measures by which needless hardship is imposed upon the consumptive individual, his family, and his physician.

The Goodsell-Bedell law of the State of New York, which makes it practically prohibitive to establish a sanatorium for consumptives anywhere in that State, is an example of State phthisiophobia. If any board of supervisors of a county, or a town board, should be opposed to the establishment of a sanatorium for consumptives in their vicinity, the mere adoption of resolutions would suffice to make the creation of such an institution impossible. Heretofore the State Board of Health alone decided such matters.

The attempts of some Colorado and California statesmen to exclude consumptives from entering their respective States is another feature of State phthisiophobia. That we have occasionally even some phthisiophobia in the profession I am obliged to admit, though I do it with a heavy heart. Thank God, this professional phthisiophobia is very rare, and as I believe to have shown in my recent article, entitled, "A Plea for Justice to the Consumptive," even if there is now and then a case of professional phthisiophobia, I am proud to say we have in our ranks thousands of the most devoted friends of the consumptives.

Private phthisiophobia has resulted partially from the Federal and State phthisiophobia just discussed, and partially from the excessive caution of those who are not sufficiently educated in the matter. Let me give you a few instances of the form it takes. Poor sewing women have been discharged, not because they were consumptive themselves, but because they were imprudent enough to mention in the presence of their employers that they were living with or related to some consumptive. Employees in offices having an innocent cough are discharged for fear of contagion.

To show you how absurd all this fear is, how utterly wrong and inhumane it is to classify a disease like pulmonary tuberculosis with as dangerous a disease as smallpox, permit me to use the following illustration: If a consumptive is clean and conscientious with his expectoration, you may shake hands with him, sit next to him and associate with him for hours and days, and you will never contract the disease from him. Sit next to a smallpox patient, shake hands with him, and associate with him for half an hour, and unless you are vaccinated and revaccinated you run the risk of contracting smallpox.

A well-conducted and well-equipped sanatorium for consumptives is the safest place where not to contract the disease. A smallpox hospital, no matter how well kept, no matter how hygienically constructed, is always dangerous to enter unless you are vaccinated and revaccinated.

So as not to convey to the public the idea that the mere contact of a consumptive suffices to transmit the disease, I prefer to call consumption a communicable disease, and not by any means a dangerous contagious one. Let us all be true, kind and helpful friends to the consumptive, particularly where he is conscientious, and let us not forget that consumption is a disease of every country and every clime, of the rich and of the poor, of the high and the low, and that we can never tell when it may strike our own household or circle of friends.

Some individuals have, by virtue of their calling, a special duty to perform in the combat of tuberculosis. The most important of those is, of course, the physician, "the well-trained physician," as I say in my title. In order to train good physicians we must have good schools. In order to have good medical schools they must not depend for their existence on the number of students paying tuition fees, and thus reducing the standard of requirements. In other words, our medical schools should be State institutions and be supported by the State, and the United States Government alone should be permitted to grant licenses to practice medicine. A Federal commission of medical examiners could meet once a year in every State of the Union to examine candidates. Then the American people throughout this country would know that only duly qualified practitioners could be their medical counselors.

Every family should have a family physician, for to my mind it is the family physician, and not the specialist, who has to do the bulk of the work which lies before us. It is to him that I look as the most important factor in the possible eradication of tuberculosis as a disease of the masses. But the families under his charge should remunerate his services for the prevention of disease as liberally as when he is called to treat an occasional sickness.

Phthisiogenetic diseases—that is to say, those that are apt to be the forerunners of pulmonary tuberculosis, as, for example, scarlatina, measles, or grippe—are all diseases which the earlier they are discovered the more chance there is of their taking a favorable course. The family physician on his regular visits, whether anybody is ill or not, may discover the early symptoms of these diseases before the sufferer himself has any idea of being a patient. What great good cannot the family physician accomplish by a regular periodic examination of the chest of every member of the family entrusted to his care? How many more early cases of consumption could thus be discovered, and by timely and judicious care be cured, than we are curing now? Again, it is the family physician, friend and adviser, who may exert the most beneficent influence on old and young by pointing out to them the danger of excesses of any kind, and particularly intemperance; for let us repeat that alcoholism is not only one of the most important phthisiogenetic diseases, but, let me add, also the cause of a number of the most serious nervous and mental disorders, leading, alas, too often to crime and moral degeneration of whole families. In some European sanatoria for tuberculous and scrofulous children statistics show that more than 25 per cent. of the little inmates are of alcoholic parentage.

In order that the high mission of the family physician should be truly effectual in the eradication of the disease in question and the improvement of the human race in general, not only the rich and well-to-do, but also the poor and poorest, should be provided with a regular medical attendant, who should be in the service of the municipality.

Of the duties of the teachers I have already spoken in relation to the prevention of tuberculosis during childhood. I wish to add that to my mind the teachers in our public schools should not only be familiar with the ordinary methods of preventing the spread of the disease and preach and practice ample ventilation in their classrooms, but they should also be familiar with the general appearance of the tuberculous child, so that they may call the attention of the school physician or the parents to the condition of the pupil. It should be known that bone and joint tuberculosis is most frequently manifested in childhood. The early symptoms of tuberculosis of the bones and joints show themselves in the lameness and easy tiring of the arms or legs affected. If the spinal column is affected, the symptoms will depend upon the location of the vertebræ which is attacked by the disease. Scrofulosis, which is only a milder form of tuberculosis, and which is even more frequent than bone tuberculosis in children, is easily recognized. The scrofulous child is usually pale, with flabby skin and muscles. The glands around the neck are swollen, and skin disease, sore eyes, and running ears are frequent symptoms. The little patient usually manifests a phlegmatic condition, but we may also find that some are nervous and irritable. The latter often have a peculiarly white, delicate skin, which makes the veins visible. Fever may be observed in some children. In view of the happily very curable nature of scrofulous affections, the importance of the early recognition and of the timely and judicious treatment is, of course, self-evident.

This scrofulous condition may be either inherited or acquired. The hereditary type comes from parents who are scrofulous, tuberculous, or syphilitic. It has also been proved that when one or both of the parents were alcoholics—that is to say, addicted to the chronic use of intoxicants—their offspring have become scrofulous.

All this shows how dangerous it is for weakly and sickly persons or those afflicted with any of the above-mentioned diseases to marry and have children before being completely restored to health. We wish to state again that all these diseases can be cured by timely medical treatment. To be cured from alcoholism the physician's help is not always necessary. In most cases it requires only the earnest and honest endeavor to abstain.

The principals of schools should make it their duty to incorporate in the curriculum of all classes gymnastics, outdoor exercises and games. The mental development of our children, valuable as it is, should never be pushed to the detriment of their physical development and well-being.

Clergymen also should inculcate these ideas in the minds of the people under their charge, and they, too, should feel pride in having their churches hygienically constructed and well ventilated. Fixed carpets should not be used in places of worship, where so many people congregate. Catholic priests in charge of large congregations may do well to follow the example of the great Roman divine, the Bishop of Fano, in Italy. In a circular recently issued by him he asks the priests of his diocese to comply with the following rules: "1. In every church the floor must be regularly cleaned with sawdust, saturated with a strong sublimate solution. This thorough cleaning should take place particularly after holidays when great masses of people have visited the church. 2. Every week all ordinary chairs and confessional chairs must be thoroughly cleaned with moist rags. 3. The grate of the confessional chairs must be washed every week with lye and then polished."

It might be of advantage if such articles of adoration as crosses, statues, or, as in Greek churches, pictures, which are often kissed by devout Catholics, be included in the periodic disinfection. Kissing the Bible when taking an oath should be discouraged by divines and jurists.

Ministers of all denominations should consider it beneath their dignity to allow their names to be used to advertise patent medicines and other secret remedies. I am convinced that if they were aware of the fact that many of the advertised patent remedies contain as much as 30 and 40 per cent. of alcohol and often other dangerous ingredients they would refrain from indorsing the use of medicines of whose composition they have not the least idea. Neither should religious newspapers lend their columns to the advertisement of nostrums and patented remedies of all sorts. It is to be regretted that patent medicines are also not infrequently recommended by statesmen and legislators. Their personal indorsement of this or that secret remedy, given without forethought and, perhaps, even with good intentions, has often done irreparable harm to sufferers.

Of the duties of the public press in this fight against the "great white plague," the most formidable disease of the masses, I cannot speak earnestly enough. Our daily and weekly papers have already done much good in disseminating knowledge regarding the prevention of consumption. By continuing to spread the literature of the various associations and committees on the prevention of tuberculosis they do, perhaps, more than any other agent.

Unfortunately, the public press serves also for the advertising of the many "absolutely sure consumptive cures" which are from time to time put on the market by unscrupulous quacks. I am nevertheless sanguine enough to hope that in time the better class of newspapers will, in the interest of the community at large, no longer extend the hospitality of their columns to such dangerous advertising matter, especially when it is protested against by the intelligent reader. How many poor consumptives have lost their last little reserve fund by giving everything they had for a dozen bottles of the "sure and quick cure," only those who come much in contact with them know. How unscrupulous some of these charlatans are in their method of procuring certificates of cure, which they then publish as bait to the unfortunate help-seeking sufferer, is something which can hardly be believed. Let me tell you of one instance. A poor woman in the last stages of consumption came to me seeking advice. When asked for the name of her former medical attendant she confessed that she had been treated for a number of weeks by a quack concern, and now, her means being exhausted, she was made to understand that they would not continue to treat her unless she would give them a certified testimonial that she had been thoroughly cured of her disease, which had been pronounced an advanced case of consumption by prominent physicians. This poor sufferer had not derived any benefit whatsoever from the treatment, and as a result her conscience would not permit her to become a partner to such a procedure.

Some of these unscrupulous concerns resort to absolute fraud. To beguile the public they used the name of the great scientist and benefactor, Prof. Robert Koch, of Berlin, as though he were associated with them in their business and treatment. They advertise his picture beside that of an individual with a similar name, and head their advertisements with "Professor Robert Koch's cure." While the medical profession at large was, of course, aware of this evident fraud, the public did not seem to be, and in order to be able officially to deny any such connection I wrote some time ago to Prof. Robert Koch, of Berlin, Germany. The professor's answer was a lengthy one and full of indignation, and I will only give you the substance of it. He says that the alleged "lung cure" of Dr. Edward Koch, or under whatever name this system of treatment may be presented to the American public, is a very base fraud, and that he, Geheimrath Professor Dr. Robert Koch, has no relations whatever with Dr. Edward Koch, with any other individual who may be connected with this concern, nor with any of its methods of treatment; neither has he ever had any relations with the same. He hopes that we may be successful in putting an end to this base and fraudulent concern. This is to be particularly desired in the interest of the many poor consumptives who have been deceived by the use of his (Prof. Robert Koch's) name in connection with the so-called Koch's Consumption and Asthma Cure.

There are numerous other concerns which put their secret consumption remedies on the market and resort to all sorts of illegitimate means to make people believe that their "cures" are indorsed by the profession.

To break the nefarious trade of the men who deal in "sure and infallible" consumption remedies, to stop the practice of the men and women who claim to be able to diagnose and treat consumption by letter, the Christian Scientists, the Faith Curists, who ridicule preventive measures and the laws of cleanliness and hygiene —which are the laws of God—but who, as a token of faith, demand their fees in advance, we have but one weapon, and that is education—education by the conscientious press, the clergyman and the teacher.

Factories, workshops, stores, offices, etc., should be sanitarily constructed and well ventilated, but besides this there are other things which the employer can do in the combat of tuberculosis.

In factories, workshops, stores, offices, etc., there should always be a sufficient number of spittoons, preferably elevated and of unbreakable material. Wherever such precautions are taken and some conspicuous signs forbidding expectorating on the floor put up, if necessary, making it punishable by law, promiscuous spitting will soon cease, and an important point in the combat of tuberculosis will be gained.

All employees, men and women of whatever class, should be allowed ample and regular time for their meals, which should never be taken in the workshops. Lastly, employees should not be overworked. There should be reasonable hours for all, so that the laborer may enjoy the bodily and mental rest which is essential to the preservation of health. The germs of any disease, but particularly those of tuberculosis, will always find a more congenial soil for development in an overworked and enfeebled system. Child labor—that is to say, the employment of children under fourteen years of age—in factories, workshops, mines, etc., should be prohibited by law. The child is more susceptible to tuberculosis than the adult, especially when its delicate growing organism is subject to continued physical strain. That there are still sections in our country where child labor is permitted is one of the saddest and most disgraceful blots upon the good name of our nation.

It is hardly fair to speak of the duty of the rich as philanthropists, for philanthropy is a voluntary act, and the rich man cannot be compelled to give some of his wealth to his less fortunate fellow-men. Still less have we a right to dictate to a millionaire how to dispose of his wealth when he is philanthropically inclined. This country has nevertheless a right to be proud of many of its rich men and women, and I am the last to underestimate the fortunes which have been given to the various educational and religious institutions by our Carnegies, Rockefellers, Vanderbilts, Morgans, Piersons, Schiffs, our Helen Goulds, Phœbe Hearsts. Emmons Blaines, etc., but it is natural that those of us familiar with the needs of the consumptive poor in this country should look for help in solving this difficult tuberculosis problem to the large-hearted American men and women who make such noble use of their wealth. There are now, perhaps, plenty of libraries and colleges,, and even general hospitals, everywhere, but there is a scarcity of public baths, which should, at a moderate price, be at the disposal of the people every day, winter and summer, and for some hours in the evening. There is a scarcity of decently-kept places of amusement, open all the year, where the laborer and his family may spend a pleasant Sunday afternoon and partake of non-alcoholic drinks. There is a scarcity of hospital and sanatorium facilities for thousands of poor consumptives who could be cured if only taken care of in time. Sanitoria for consumptive adults, as well as seaside sanitoria for scrofulous and tuberculous children, are a crying and urgent need for the majority of our large American cities. The more consumptives we cure the more breadwinners we create and the fewer people will become burdens to the community. As the conditions are now in most of our cities and towns the majority of consumptives are doomed to a certain and lingering death, and if they are careless or ignorant of the necessary precautions, they will infect some of their own kin and neighbors.

Would that I could take some of our philanthropic friends to our densely crowded tenement districts and show them there the sufferings of mind and body of the poor consumptive who had to die, not because his disease was incurable, but because there was no place to cure it. I am convinced that if our generous and wealthy fellow-citizens would but see for themselves these conditions, instead of more libraries, universities and colleges, we would soon have better tenements, more playgrounds and parks for children, and an abundance of sanitoria and hospitals for our consumptive poor.

Our country has recently been blessed with some particularly large gifts for the purpose of research in scientific medicine. I am the last to underestimate scientific research, but what I would like to see is that a few of the millions now put aside by some of our generous fellow-citizens for that purpose should be utilized to demonstrate practically and on a large scale what laboratory and clinical research work concerning the prevention and cure of tuberculosis has already taught us. Experiments by that careful observer, who is as great a scientist and physician as he is a humanitarian, our esteemed colleague, Dr. Trudeau, and the experiments by many others have demonstrated that animals deprived of light and good air succumb to an inoculation of tuberculosis much more rapidly than animals injected with the same amount of tuberculous matter, but which are left to roam about in the sunshine and fresh air.

Why do our philanthropists not utilize the results of these experiments and build model tenement houses where air and light is plentiful for all who live in them? Why don't our municipalities benefit by these laboratory experiments, which are corroborated by clinical work in all our hospitals, and see to it that overcrowding, the existence of dark bedrooms and dark hallways, the accumulation of filth and odor, is made impossible by the greedy landlords of our tenements?

I think the time has come when all municipalities should build, own, and manage model tenement houses for its honest laboring population. That this can be done with great sanitary, moral, and even financial gain has been amply demonstrated by the experiments of the city of Glasgow. Let some of the millions set aside for laboratory research work be now consecrated to research in the direction of cure. Let us have enough hospitals and homes for the hopeless consumptive poor, who constitute a menace to their fellow-men, owing to their poverty and general unhygienic environments. Let us have sanitoria for the curable, and a sufficient number of them. Let us have agricultural and horticultural colonies for the cured, and let us turn our search, or research, if you like the word better, in the direction of seeing how many lives we may thus be able to save.

Let me conclude by summarizing what, to my mind, should be the duty of municipal, State and Federal governments. Each community should have an efficient committee on tuberculosis, composed of a number of general practitioners, health officers and trained charity workers. This commission should have its offices in a building connected with a special dispensary for tuberculous patients, if the size of the community demands such a provision. Each case applying should be carefully examined for the following purposes:

1. To determine the applicant's condition by medical examination.

2. To visit his home if he has been found tuberculous, and to institute such hygienic measures as seem necessary (distribution of pocket spittoons, disinfectants, etc., gratuitously if the patient is poor).

3. To examine the other members of the family in order to find out if any of them have also contracted the disease, and if so, to counsel proper treatment.

4. To report in full to the sanitary authorities concerning the condition of the patient's dwelling. Its renovation or even destruction may be imperative when it is evident that tuberculosis has become "endemic" there, owing to the condition of the soil or other sanitary defects.

5. To determine the financial condition, whether the patient is

or is not able to pay, and whether or not by his being taken to an institution the family will become destitute.

If the latter should be the case, it would be necessary for the municipality to provide for the family. In many cases a letter of inquiry sent to the former medical attendant of the patient would materially aid in the work of the investigating committee.

Any individual should have the right to present himself for examination, and every physician should be at liberty to recommend any person for examination to the board of his precinct or district.

Every city should, of course, have an efficient health department, a building department, tenement-house commission, street-cleaning department, and a board of education, all of them combining to render the city as sanitary as possible, and thus combating centers of contagion of tuberculosis and other diseases, keeping the streets as free from dust, filth and smoke as possible, preventing the construction of unsanitary, unsafe dwellings, and the overcrowding in homes, sweatshops and factories, and making of the public schools, where our children dwell so many hours, models of perfect ventilation and places for true intellectual and physical development, thus furthering the physical and moral welfare of the entire community.

Our State legislators should do their utmost to enact such laws as will secure always proper ventilation and light in public and private buildings.

Another feature in the combat of consumption which, to my mind, has been somewhat neglected is the prevention of tuberculosis among animals; for notwithstanding Professor Koch's recent declaration at the Tuberculosis Congress in London, there is still too much evidence of the possibility of the transmission of tuberculosis from the bovine to the human race.

State boards of health should receive ample appropriation to combat tuberculosis among men and animals, and be helpful in creating State sanitoria and agricultural colonies for consumptive adults and seaside sanitoria for scrofulous and tuberculous children; also special hospitals and tuberculosis dispensaries, and lastly, the United States Government should, after the example of Great Britain, France and Germany, not only have a ministry of public health, but also a special commission, appointed by the President of the United States, composed of expert sanitarians, physicians and veterinarians, who should unite with the State and municipal sanitary authorities of the country in the combat of tuberculosis in all its forms among man and beast.

You may think some of my suggegstions too radical or too difficult to be realized. Yet, I venture to say, that would only one-tenth of the 150,000 American citizens who now annually die of this preventable and very largely curable disease be in danger of succumbing to an acute contagious disease, like smallpox, yellow fever, or plague, the whole nation would be up in arms, Federal, State and municipal legislative bodies would vie with the philanthropist to stamp out the disease. Yet the mortality from tuberculosis is only so great because the disease is not sufficiently prevented and there are not enough places to cure it, and it could be reduced to a minimum by proper methods of prevention and cure. Again, the economic loss of 15,000 American citizens from smallpox, yellow fever, or plague, all of which are acute infectious diseases, does not compare with the economic loss caused by the death of 150,000 of citizens, mostly between the age of fifteen to thirty-five, who must now annually die from tuberculosis, which is a chronic, infectious disease. Add to this great economic loss from tuberculosis the tears and sorrows of millions, why shall I not hope that the American conscience will at last awaken in statesman, city father, and philanthropist, and in all loyal citizens in a position to help toward the eradication of pulmonary tuberculosis, a disease so eminently preventable and so often curable?

16 West Ninety-fifth street.

ON FACTS, HALF TRUTHS AND THE TRUTH, WITH SPECIAL REFERENCE TO THE SUBJECT OE TUBERCULOSIS.

By J. George Adami, M.A., M.D.,
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Two centuries ago, or very little more, it was possible for the diligent student to be intimately acquainted with not merely all the learning of his own epoch, but with the accumulated lore of the ages. That time is past and gone, never to return. To-day, so vast is the accumulation of facts that have been garnered in every department of human interest, that to keep abreast of all the advances being recorded in any large branch of science is a vain dream. The diligent student, it has been said, cannot nowadays hope ever to be a completely-equipped biologist. To be a master in any main branch of biology—an all-round zoölogist, botanist, or paleontologist—is not to be thought of. The wise man knows that it is impossible to be an authority upon a half-section of any one of these branches—upon the zoölogy of the invertebrata, for example. All that is known regarding any one of the important divisions of the invertebrata it is beyond him to master. The arthropoda, for example, constitute quite too extensive a subject. It is indeed within the bounds of possibility that a man of the highest capacity may become a fairly-equipped entomologist, but if he values his reputation he will not attempt so large a task. To be a coleopterist, a master in beetles, should be his highest ambition. The sensible man should be satisfied if he can make an abiding mark as a scarabæist.

And so it is in medicine. We have reached with a vengeance the days of specialism, and so great is the outpouring of facts and of new articles regarding even the one subject of tuberculosis that it is impossible for anyone to pose as an authority upon this subject unless his whole time be devoted to it. Thus, for example, it would be futile for me as a teacher of general pathology to pretend to be an authority upon tuberculosis, nor do I come before you as such. Indeed, but for the insistence of our friend, Dr. Osler, I should not be upon this platform. With no new facts to bring before you, no record of personal observations to announce, I was, I confess, in a quandary. Thinking over the problems of tuberculosis which one might with profit discuss, and recalling recent work and the present situation of affairs—the absolute divergence of opinion of men known and accepted as accurate observers, the sure statement of one set of workers flatly contradicted by the conclusions of other sets—it occurred to me that it might possibly be of use to take for my text the old, old warning, a warning that appeals especially to medical men, coming as it does from the father of medicine himself—that experience is fallacious and judgment difficult; to point out how in the past, the very recent past, in connection with this subject of tuberculosis experience has proved fallacious; how that during the last twenty years conclusions which appeared to be absolute and sure, based upon exact observations, have been proved to be faulty, or at least imperfect, and how, therefore, it is the part of a wise man to have an open mind and to be prepared to find that what he had regarded as settled may, through fuller knowledge, become unsettled; to weigh evidence with the greatest care and to be most cautious in arriving at conclusions.

I shall have to go over what to most of you may be familiar ground, and in doing so I trust that I shall not tire you. In these days of active advance it is good at times to look back, good to call to mind the previous mistakes, so as to be guarded against falling into like errors in the future. I shall not venture to go into details, but will attempt merely to outline some of the episodes in the history of our knowledge of tuberculosis during little more than a generation. This year the bacillus, does, as it were, attain its majority, but in the years preceding its discovery the nature of tuberculosis was a matter of angry discussion.

Many here present—perhaps the majority, so short is the history—can remember as I do the time when the infectious nature of tuberculosis was strenuously denied by most medical men. How long ago that seems to us now! Yet in '80 and '81 the communicability or non-communicability of the disease was being fought over in medical associations. Years previously, by Klencke in the forties, Villemin in the sixties, and Cohnheim in the seventies, this communicability had been clearly demonstrated, but the majority of our profession still supported the older view of diathesis, and were strengthened in their position by the observations of Burdon-Sanderson and others that non-tuberculosis material similarly inoculated under the skin would set up lesions which were the same as those caused by definitely tuberculous matter. The observers who reported such developments were of recognized standing, and as their views supported the prevalent belief, their experiments were accepted until the specific bacillary cause of the disease was demonstrated beyond possibility of cavil. Those observers who opposed Villemin and Cohnheim were honest, and, what is more, up to a certain point their observations were correct. Relatively inert foreign bodies introduced into the tissues will set up a local subacute disturbance. There is inflammation of the surrounding parts, infiltration with leucocytes, local cell multiplication, and even the occasional presence of giant cells so characteristic of the true disease. To us, with more accurate histological knowledge, it seems absurd that the two processes should ever have been confounded, the differences which we can recognize between the inflammation around foreign bodies and the tubercles proper are so considerable.

Twenty-five years ago, however, these distinctions were little known. At that period our profession as a body was in the same state of uncertainty regarding the nature of tuberculosis as it is at the present moment regarding the nature of cancer and malignant growths.

This, perhaps, is not the best illustration of my text that could be given, yet here experience was fallacious and judgment rendered difficult by false deductions from experimental evidence. The facts were there, but were wrongly interpreted, and progress was retarded.

The next great step forward was Koch's memorable discovery of the bacillus. His classical publication upon the subject is more to the point. We might epitomize his pronouncement thus (I modify for present purposes a well-known passage in Sternberg's Bacteriology):

"I have found the bacilli in every one of nineteen cases of pulmonary phthisis, whether in the sputum, in fresh, cheesy masses, or from the interior of recently-formed cavities; in tuberculous ulcers of the tongue, in tuberculosis of the uterus, testicle, etc., in twenty-one cases of scrofulous lymphatic glands, in thirteen cases of tuberculous joints, in ten cases of tubercular bone affections, in four cases of lupus, in seventeen cases of grape disease in cattle. I have made inoculations into two hundred and seventy-five guinea pigs, one hundred and five rabbits, forty-four field mice, twenty-eight white mice, eighteen rats, thirteen cats, as again into dogs, pigeons and chickens. These bacilli are not to be found in healthy tissues nor in the sputa of healthy persons or in diseases of other orders. There is one common factor in the formation of tubercles in all these different forms of disease and in all these different species of animals. In the tubercles there are present micro-organisms—bacilli—having identical staining reactions. These bacilli inoculated into the animals of the laboratory reproduce the condition of tuberculosis. Therefore, the one organism, the bacillus of tubercle, is the cause of a disease common to a great number of warm-blooded animals. That disease can be and is transmitted from one species to another.

Do not misunderstand me. These are not the actual words of Koch, but they give, I think, correctly his facts and the inferences that were universally drawn therefrom, and his definite statement that human and bovine tuberculosis were identical was accepted on all hands. He afforded us an extraordinary array of facts, and it is doubtful whether before or since, such a masterly array has or had been produced in connection with any one biological problem. But, despite all this familiar knowledge, he did not attain to the whole truth. What we have been fighting about during the last few years in its essence resolves into the determination of what proportion of the whole truth is attained in these primary conclusions. Let us here emphasize that it is not a question regarding the accuracy of the facts adduced by Koch. Each fact adduced by him has been abundantly confirmed. All the same, the conclusion reached by him is only a half-truth. Other facts since determined have modified his conclusions. To express it briefly, the bacilli obtained from other forms of the disease in other species of animals, while in the main transmissible to animals in the laboratory—to guinea pigs, for example—have not been found in any case mutually transmissible under ordinary conditions of experiment. While certain features were common to all, differences have been found—minute differences in shape, differences in rate of growth outside the body, differences in virulence towards individual species. Even as regards the very susceptible guinea pig, the rate and extent of the development of the disease has been found to vary. This, as I say, is old and well-established history, but for present purposes it is worthy of reference as establishing the domination, if but for a few short years, of half-truths.

It will be remembered that Mafucei, Strauss and others demonstrated that the bacilli obtained from birds, the victims of tubercular disease, differ from those obtained from human sources, that they are longer, grow more abundantly on the media of the laboratory and that at a somewhat higher temperature limit, and are not pathogenic to dogs, while contrawise the tubercle bacilli have no effect upon fowls, and that forthwith it was concluded by some at least that here we had to deal with two distinct species of tubercle bacilli—a most important conclusion, if true, for it opened the way to the possibilitity of specific distinctions being present between the tubercle bacilli obtained from other species of animals.

It seems all so clear: The bacillus isolated from birds has distinctive characters differentiating it from the human tubercle bacillus. There is a definite fact, and so far as it goes, incontrovertible. The conclusion to be drawn therefrom would seem obvious: we have to deal with two species, closely allied, it may be, but nevertheless distinct, that is, if we accept, as we seem bound to, that the only feasible plan in connection with these minute forms of life is to regard as separate species forms which exhibit constant differences. The facts are true—the conclusion is not true.

We all know how Rouse and Nocard (1898) removed the difficulty and demonstrated the truth, showing that, by accustoming the human bacilli to live within the bodies of birds, these can, in the course of several months, modify their characters so that now they assume the properties and virulence of the avian species—observations of fundamental importance and basal, as throwing light upon the solution of some of the most important problems that bear upon the propagation of the disease in man. It is now agreed upon all hands that the tubercle bacilli are capable of modification by passage through a succession of individuals of one species. The present crux is the extent to which the modification takes place, more especially in connection with the bacilli which have undergone passage through cattle. And much depends upon the right answer to this question. Koch's early researches, if they mean anything, mean this, that there is the gravest danger to be apprehended from the ingestion of infected food products obtained from animals suffering with active tuberculosis, and in various countries special legislation has been enacted to prevent the use of such infected material. Bearing in mind these newer facts, has there been a false alarm, and is it necessary or is it not to enforce the legislation? From being purely a scientific question, it will be seen immediately that this is a question of wide economic importance.

It was in this country by Frothingham, Theobald Smith and Dinwiddie that the question of the absolute identity of the human and bovine bacilli was first actively raised and clear evidence of the non-identity was brought forward. But undoubtedly Koch in his famous address on Tuberculosis at the Congress in London in 1901, was the first to make this a live matter. Koch's main argument in that paper may begin as follows:

Tuberculosis in cattle is very common and tuberculous mammitis with the presence of enormous numbers of tubercle bacilli in milk is not infrequent, at least, in European countries.

If bovine tubercle bacilli were virulent for man, then, more particularly young children drinking such milk should show frequent signs of tuberculosis. But, as a matter of fact, we find the very reverse. An examination of the autopsy records of large hospitals in many countries shows that primary intestinal tuberculosis in the very young is curiously rare; therefore, says Koch, bovine tubercle bacilli have so little virulence for man that the drinking of the milk of tuberculous animals is to be regarded as a negligible factor in the causation of human tuberculosis.

But now, to choose one much-discussed conclusion in direct opposition to this, we find the statements and deductions of the late Thorne Thorne, a careful student of infectious diseases, one holding deservedly a very high official standing in Great Britain. These may be epitomized as follows (I purposely exclude figures and details so as not to detract from the broad outlines of the case): Thanks to the promulgation of the laws of hygiene and to the improved construction and ventilation of the home and the workshop, there has been a very remarkable decrease in the mortality from tuberculosis in Great Britain during the latter half of the nineteenth century.

There is, however, an exception to this statement. The deaths below the age of five registered as due to tabes mesenterica—that is to say, as due to abdominal tuberculosis—instead of diminishing, have definitely increased.

The improved sanitary conditions must have told upon all ages alike; therefore some other factor must be invoked to explain the increased infantile mortality from abdominal tabes, some factor telling upon the young child and not upon the adult.

There is one prominent difference between the young child and other members of the community, and that is the character of its nutrition. Increased mortality from tuberculosis does not show itself until the period when the infant begins to be fed upon cow's milk. After the age of five, when the child ceases to partake of a milk diet, the incidence of tuberculosis diminishes. There has been a steady, not to say rapid, increase in the spread of bovine tuberculosis coincident with the increase of tabes mesenterica.

Therefore, the increase in abdominal tuberculosis in children noted in the mortality statistics of Great Britain can only be ascribed to infection through the digestive tract, and therefore in this remarkable state of affairs, we have the strongest possible evidence that bovine tuberculosis is transmissible to man.

Dr. Salmon has brought forward a similar argument from the vital statistics of Massachusetts.

This argument, it will be seen, is, at first sight, as convincing as the former; that was based upon the absence of tuberculosis in children; this upon its presence. It is as true that primary intestinal tuberculosis in young children is distinctly rare, as observed at autopsy, as it is that there has been a definite increase in the deaths in Great Britain registered as due to tabes mesenterica. All the same, Koch's conclusion constitutes at most a half-truth, Thorne Thorne's possibly does not attain unto that status.

We now know—and curiously Koch himself had been one of the first to publish the fact—that if we give tubercle bacilli to animals by the digestive tract, the primary recognizable lesions do not by any means of necessity first manifest themselves in the walls of the intestines or even in the associated mesenteric glands. On the contrary, in the majority of cases, they are apt to show themselves in the peribronchial, peritracheal and cervical lymph glands. Therefore, absence of abdominal tuberculosis is by no means an indication of absence of infection through the digestive tract. Nor again was Koch justified in considering only those cases in which there were intestinal lesions; if with them, as would seem only right, cases of primary mesenteric tuberculosis be united, then primary abdominal tuberculosis in children is not so rare as has been laid down. Koch's eventual conclusion may, or may not be correct, but it is based upon absolutely insecure premises.

As regards the other case, we know now that the use of the term tabes mesenterica in English death reports means practically nothing in the majority of cases. It has been the custom to use this as a convenient term for deaths in young children preceded by progressive wasting. Where careful autopsies have been made in connection with English children's hospitals, the number of cases determined of primary abdominal tuberculosis have not proved themselves materially more abundant than in Germany or this country. They bear no relationship to the numbers given in the mortality statistics.

There are, it is true, certain curious exceptions to this statement —exceptions so at variance with other European and American experiences that they must, I think, be justly regarded as doubtful until further information is obtained. Thorne Thorne's argument is thus, I hold, valueless as absolute evidence of infection from bovine sources, and Dr. Salmon's figures from the vital statistics of Massachusetts, I take it, labor under the same weakness. He found that there is an increase of 30 per cent. in forms of tuberculosis other than phthisis in children under five years of age, while there is a coincident decrease in the mortality from phthisis at all other ages of about 45 per cent. (I quote from Rober, not having seen the original). Here against it has to be objected that the figures are not based upon absolute diagnosis. Remembering that the danger of infection through milk has loomed large in the medical world of late years, a tendency to ascribe meningitis and wasting diseases in children to this cause is inevitable. Has Dr. Salmon been able to demonstrate any diminution in the number of cases coincident with the period of active eradication of the disease among cattle by the Cattle Commissioners of that State, or to announce a corresponding increase of frequency of that disease as established by the tuberculosis statistics of the large hospitals of the State? If he has not, then, though they appear so very striking, I cannot but feel that the figures are of little value. Here, again, do not misunderstand me, I do not deny that there may have been increase in the mortality from tuberculosis among young children, that may well be the case. I only urge that, as a matter of evidence, vital statistics are too unsure to be applied as a proof positive. Dr. Salmon's figures are most striking, but at most they afford useful indications for applying a surer test.

But it may be urged that there still remain the remarkable facts, first, that abdominal tuberculosis is much more common in children than in adults, and secondly, that at the conclusion of the milk-drinking age, the mortality from tuberculosis in general shows a remarkable and sudden drop. Both these facts have to be admitted, and yet, in careful study, they will be seen, I think, to afford only an apparently, and not absolutely, conclusive agreement. To render the argument incontrovertible it must be shown not that tuberculosis is absolutely more frequent during the milk-drinking age, but that, taking the whole infantile mortality, tuberculosis still maintains a proportionate increase. If you study that very striking chart which all of you passed as you entered this room—I mean that devised by Dr. Fulton, and showing the incidence of tuberculosis to other forms of disease as a cause of death at successive life periods—even although it is constructed from mortality statistics and so exaggerates the number of cases of infantile tuberculosis—you will observe that while very many more children die from tuberculosis before the sixth year than from the ages of five to ten—nevertheless, *proportionately*, a greater number die from this disease during the latter period than from other diseases. In other words, the milk-drinking age corresponds with a period of extreme susceptibility on the part of the human organism to very various infections, and secondly, with a peculiar tendency for tuberculosis mainly to affect the lymph glandular system. And both these tendencies have to be weighed very carefully before we can reach a positive result. But I shall revert to matters bearing upon these two objections in a few moments, and then their value will, I trust, be better realized.

As a useful introduction to further study of the value of the evidence afforded regarding the transmission of the disease from cattle to man, and of the subtlety of half-truths, it will be well to consider next the recent and in many respects important contributions to the subject by one who has made other most valuable contributions thereto. I refer to the recent address of Professor von Behring to the Association of German Naturalists at Cassel.

Behring is strongly of opinion that the principal source of tuberculosis is the milk with which infants are fed. His argument is the following:

If milk containing virulent anthrax bacilli be given to young guinea pigs less than eight days old, there is obtained a generalized infection in all respects similar to that obtained by subcutaneous injection. In short, the first line of defense—the mucous membrane of the digestive tract—is so feeble in the new-born that bacteria pass with ease into the deeper tissues. Giving attenuated anthrax bacilli to the newly-born guinea pig, Behring found them present in the tissues for a long period without causing the death of the animals. So also with tubercle bacilli given by the mouth to these young guinea pigs. They set up tuberculosis which appears first, not in the mesenteric, but in the cervical lymph glands. The same bacilli fed to adult guinea pigs are without effect. Recalling how frequently in man the cervical and allied peribronchial glands show signs of primary infection, Behring concludes that in man, as in animals, pulmonary tuberculosis is of intestinal origin, and that it may be contracted at a very early age. But this implies that bovine tuberculosis is the main cause of human tuberculosis.

Here we have some most important facts contributed to the discussion, and a most important deduction. All the same, I think it must be recognized that the facts, while true, are in this respect but half-truths, and that the deduction is therefore unsound.

That bacteria pass through the intestinal mucosa, and do this at all periods of life, is a matter which, it seems to me, must be recognized, the proofs are so strong. I do not see, for example, how the results obtained by Dr. W. W. Ford, my old pupil, now of the Johns Hopkins pathological department, upon the presence of bacteria in healthy organs can be controverted. That they pass with peculiar ease during the earliest period of extrauterine existence must also be admitted. Twenty years ago Weigert pointed out that this must be accepted regarding the tuberculosis virus in infants. If this be true, how is it that the innumerable bacteria of the intestines do not, by their passage into the system, kill off every child born into the world, for these intestinal bacteria have undoubted pathogenic properties? As a matter of fact, such bacteria are constantly being killed within the tissues by the leucocytes and by the endothelium of the vessels, more particularly by that lining the liver capillaries. The remarkable development of the lymph glandular system in the child is not a little suggestive as indicating a protective mechanism.

It must, therefore, be freely admitted that microbes taken in with the food are likely to pass into the lymphatic and vascular systems, and that in individuals fed with milk containing bovine tubercle bacilli in large numbers some, it may be a large number, of these find their way into the organism. But, admitting this, are we to accept Behring's conclusions? I think not. It will be seen that Behring argues that, granted this admission, we have an adequate explanation for most tuberculous infections. He points out that bacteria entering by the digestive tract do not necessarily set up tuberculosis in the nearest set of lymphatic glands, but, passing through these, only multiply in a region of less resistance, which in general is, in the guinea pig, the cervical lymph glands, in man the peribronchial. This also must be admitted. The observations of Delepine that when bacilli are inoculated into the leg of the guinea pig tubercles are found in the spleen before even the superficial glands of the thigh become affected abundantly demonstrate this fact. It would therefore seem useless, or almost useless, to attempt to draw any conclusion in regard to the mode of infection from statistics regarding the relative frequency of intestinal and other forms of tuberculosis in children and adults, respectively. The careful statistical observations of numerous observers have shown that in children, as in adults, the most frequent indications of primary infection are to be found in the thoracic cavity. The most that can be said is that if in children indications of primary mesenteric tuberculosis are relatively more frequent than they are in adults, this affords clear presumptive evidence that infection has been through the intestines.

It must, however, be recognized that this is a matter for argument—that is, may be urged on the contrary, that the evidence shows that the bacilli multiply and set up lesions not at the point of entrance, or in the lymph glands first reached by them, but in glands having the lowest resisting power; that the fact that in some cases these glands are the mesenteric, in others the cervical, in yet others the peribronchial, renders it possible, if not indeed probable, that the mesenteric glands may be most involved in a certain proportion of cases in which infection has been through the respiratory tract; that mesenteric involvement is not proof positive of alimentary infection; and in support of this thesis it may be urged that in the cases carefully examined so far, bacilli of the human type have been found more frequently than those of bovine type.

Understand me: I am not here expressing a belief. I am but putting a case—a line of argument which it seems to me difficult to disprove. Instinctively my personal impression is that this is a mistaken argument. What I want to show is that, given a limited number of facts, our deductions cannot be positive; we cannot be sure that we have a true knowledge of affairs. Behring's hypothesis is thus weakened by his failure to prove surely that peribronchial tuberculosis in man is due to infection through the digestive tract. The very fact that tuberculosis does not necessarily show itself in the first set of lymphatic glands to which the bacilli gain entrance, and that the development of the tubercles would seem to depend rather upon relative lack of resistance in the different tissues composing the system, makes it impossible to make positive statements regarding modes of infection.

Behring has completely overlooked one fact, namely, that this lack of resisting power to the passage of bacilli in young animals is not confined to the mucosa of the intestines. It is common to all mucous membranes—to that of the mouth, throat, trachea, and bronchi. All these in the adult permit the passage of a certain number of bacteria, just as does the intestinal mucous membrane, and infection may occur through them as through the intestines. Therefore, valuable as are his observations as indicating the way in which infection may occur in the individual, they carry us not one whit further towards solving the question as to whether the tuberculosis of the young and of the adult is mainly of bovine or mainly of human origin. They do not prove that such infection has surely taken place by means of the digestive tract. If, as I gather from his paper, he is of opinion that infection is in man through the intestines, and is contracted at a very early age, lying latent for years, he would have had to show that evidences of tuberculosis are to be made out in the glands at or immediately following the milk-drinking period almost as frequently as at later periods. Now, Nageli's figures, which he quotes, amply indicate that this is not the case. Nageli found that whereas evidences of the disease were to be found in the bodies of everyone in Zurich who died after the age of thirty years, in children from one to five years only 17 per cent. showed recognizable evidence of its presence; under one year no signs could be seen. Failing this, he should explain how and why bacilli lie latent, causing no recognizable reaction, not merely for days, but for years. In this he would experience considerable difficulty, when, as a matter of fact, tuberculosis other than abdominal is in young children characterized by its tendency to rapid spread. Whereas in adults we find great liability to infection, productive change, and clear indications of a well-marked reaction on the part of the tissues, this is characteristically absent in children; or, otherwise, once the bacilli gain a hold upon the young child, the resisting powers are but slight. The doctrine of latency of the bacilli in young children has no more sure foundation than Baumgarten's well-known theory of latency in connection with congenital tuberculosis. It a theory having no adequate foundation of facts to support it.

Over and above all Behring is so impressed by his discovery of the easy passage of bacteria through the intestinal wall in the young animal that he wholly neglects the evidence already accumulated of a similar extensive—though not so extensive—entry at all other periods of life, and so he fails to comprehend that tubercle bacilli must gain entry, and *may* set up infection, at all ages, and may enter not merely through the digestive tract but also through the respiratory passages; considerations which under the development of a theory of latency quite unnecessary, and at the same time materially weaken the argument that habitually infection originates in the young child and then through the digestive tract. Here, as bearing on this point, I may recall Ravenel's observations upon feeding young dogs (I believe I am correct) with butter containing tubercle bacilli and finding the bacilli a few hours later in the contents of the thoracic duct.

How we are to regard infection in general in face of this frequent entry of various microbes into the tissues is quite too large a subject to enter into this evening. I would only state that the mere entry is a secondary matter; what is of import is the virulence of the entering microbes and the extent of resisting power of the tissues.

And this brings up coincidentally another argument, not, it is true, raised by Behring, but in part it may be implied, namely, that there is a greater liability to infection by bovine tuberculosis than by human. The argument may be expressed thus:

Human tubercle bacilli, as Behring himself has more particularly shown by his immunization experiments, have relatively little virulence, as a rule, for cattle. Again, human tubercle bacilli are less virulent for guinea pigs: bovine tubercle bacilli are remarkably virulent for these animals. Therefore, bovine bacilli must be accepted to be more virulent also for man, and infection through bovine sources is the more liable to occur if bovine bacilli gain entrance into the human system. This argument again may be correct. Again, it has to be admitted that it is insecure. Our experience with regard to the passage of bacteria through a series of animals shows that, in some cases, the virulence of these bacteria is heightened for animals of another species, but for animals of yet other species it is lessened. We cannot argue from analogy. The only way to determine this point is by observations regarding the effects of bovine tubercle bacilli upon the human being. Now we possess such observations, and as far as they bear upon relative virulence they are, to say the least, conflicting. That bovine bacilli are capable of setting up tuberculosis in man is now, I think, surely proved. And here let me state that with the accumulation of fresh evidence my personal views regarding this have undergone some little modifications. Believing three years ago that the communication was distinctly rare, I now cannot but conclude that it occurs not nearly so rarely. I still, however, cannot go so far as Behring would indicate. Rather I hold with the opinion of the late Professor Nocard, uttered at the London Congress, that it is a secondary factor in the progress of human tuberculosis. But this is in itself but a secondary matter and parenthetical. Some, at least, of the cases collected by Dr. Kober, of Washington, must, I think, convince all reasonable individuals. While many of the eighty-five cases he has collected of milk infection do not fulfill all the conditions required to make that positive as compared with presumptive evidence, sufficient evidence is left to establish the case. More particularly the instances of transmission through the infection of wounds, notably those reported by Ravenel, are beyond cavil. It is not a little remarkable that Behring would leave these out of account, giving as his opinion that where general infection follows such wounds infection develops, not from the wound, but from the setting up of a tuberculosis of intestinal origin already present but latent—a curious example of how far a working hypothesis will carry an earnest worker once it gains the mastery. The majority, I feel assured, will be content to accept such general infection as directly induced by the profuse local growth of bacilli in the region of the wound. But, accepting these cases—or a considerable number of them—what evidence do they afford that the bacilli are of increased virulence? Taken altogether, they prove the very reverse. I mean this: once it is granted that the bovine bacilli can cause the disease in man, then if they possess high virulence for human beings, the irrefutable cases should be more numerous than they are, and the individual cases already collected should more constantly indicate the peculiarly rapid or malignant advance of the disease. Certain cases, it is true, show this, but by no means all. One matter is very striking. Not a single report, as yet, to my knowledge has been published in which the little children supplied from one milk round have coincidently been found to suffer with tuberculosis. Now the milk from a cow with a tuberculous udder may contain literally millions of bacilli, so many that even after dilution with the milk of ten or twenty healthy cows, each cupful must contain an abundance. I may here, for example, recall a well-known observation of Kanthack and Haden that 50 per cent. of the milk supplied to the various Cambridge colleges was infectious for guinea pigs. It is, therefore, not a little remarkable that if bovine bacilli be highly virulent, then, in countries where bovine tuberculosis is much more common than it is in this, taken into the intestines as they are day after day by young children, we have no evidence that they set up local epidemics of the acute disease. Unfortunately those cases are not placed upon record, or at most are but incidentally referred to, in which children fed upon the milk of highly-tuberculosis herds, have remained in perfect health and show no signs of the disease. Yet these cases exist and a little inquiry brings them to light. The only conclusion that I can reach provisionally is that, in general, bovine tubercle bacilli are not more virulent for man than are those of human provenance, if indeed they be so virulent.

But this method of approach is most unsatisfactory. It can but yield us partial results, but part of the truth. Once we accept that infection may occur through milk and seek to find evidence of this, then if, as I say, the bacilli are not more virulent than are those of human origin, we must be prepared to accept that many cases of bovine origin run a prolonged course. And we must inevitably fail to trace a large proportion of the cases simply because so long a time has elapsed that the specific occasion of infection passes out of the memory of those immediately concerned. And if, again, we accept, as we must, that the focus of primary infection may show itself at a distance from the point of entrance of the virus, it becomes hopeless to arrive at anything approaching to a correct knowledge of the proportion of cases due to bovine infection.

To arrive somewhat near the truth concerning the frequency of transmission of tuberculosis from cattle to man, only one correct method presents itself to me. That method has been made possible by and owes itself essentially to American research, and, above all, to the painstaking and accurate studies of Dr. Theobald Smith. Parodoxically it is based upon those facts which at first were by many regarded as proving the non-identity of human and bovine tuberculosis. To Dr. Theobald Smith we owe the most careful investigations into the features which differentiate the bovine strain of tubercle bacilli from the human, those features superadded by prolonged growth in the body of individuals of one or other species; and lately he has added to this earlier work by showing how to differentiate the two by determination of the reaction in the glycerine broth upon which they are grown. If this at first be made freely acid, the bovine strain of the bacilli eventually causes the medium to become alkaline; the human strain after producing a temporary alkalinity of the medium causes it to revert to an even greater acidity than at first. It will be remembered that Roux and Nocard showed that it required months to convert the human into the avian type, and after months it may well be that the bovine bacilli that have entered the human body take on the human characteristics. Hence, I doubt whether the test to be proposed can be applied to cases of chronic diseases or even to acute cases developing in adults. In the latter it may be well that the bovine bacillus only becomes acutely infective after a slow and prolonged local growth, after it has become accustomed to the new soil and has become modified. But acute cases occurring in young children, whose tissues are less resistant, ought to afford the required proof, for the active development of the bacilli should occur before the original features become lost. If, in each of our large centres, some one or more workers were to make cultures of the bacilli from a long series of such acute cases, and were to apply Smith's test, the relative frequency of infection from human and bovine sources would be determined. Nor can I think of any better means from a medical standpoint for utilizing such noble gifts as the Carnegie Fund, for example, or those placed at the disposal of the Phipps Institute, than in the direction here indicated. The work is laborious; time—some two or three years—would be necessary to collect a sufficiency of instances, and great patience. But if some promising and well-trained investigator were to take up the work in each of our great cities under the central direction of one leader in the profession or of a small committee the necessary facts would be collected in necessary numbers; what is more, the results obtained by several independent observers would eliminate the personal equation, a matter of angry debate would be settled, we should possess positive rather than presumptive evidence, and we should be nearer to the truth.

What that truth is I cannot announce to you, for we have not yet attained to it. I can only say that the method here indicated is promising and possible, and that already those not using material which comes up to the requirements here laid down have discovered bovine bacilli in cases of human infection. Vagades has obtained cultures of bacilli of the bovine type in one out of twenty-eight cases isolated from man, Lartigan at least one out of nineteen, the German Commission in four out of sixteen cases examined, DeSchweinitz in two out of four; and when we come nearer to the requirements here indicated, Theobald Smith has found them in one out of two cases of primary mesenteric tuberculosis of children, and Ravenel in two out of five.

But why, it may be asked, trouble so much about arriving at the exact truth? You admit that bovine tuberculosis is transmissible to man? That is sufficient, and once this is recognized, the duty of the Government and of the people is obvious. What is more, all advances so far have been made by recognition of half-truths in biology. To quote illustrations, that I have already offered in another connection, the most potent argument in favor of regarding the anthrax bacilli as the active agent in infection, brought forward by Davaine, who shares with Pollender the honor of having discovered the first bacterial cause of disease, was that if a pregnant sheep or cow died of the disease, the maternal blood which contained abundant bacilli was capable of causing the disease in other animals, whereas the blood of the fœtus which he found free from germs was absolutely harmless even when inoculated in large quantities. We now know that the fœtal blood in infectious diseases is not necessarily free from the germs of the disease. The fœtus may suffer with the same infection as did the parent. But in the days when methods of isolation of bacteria were imperfect, no surer demonstration could well have been adduced of the pathogenic power of the bacilli. Here, then, we have a distinct advance based upon a half-truth. Later, in connection with this same disease, Pasteur, who demonstrated that the bacilli are the direct cause of the disease, pointed out that if a broth culture be made of the bacilli and then these be filtered off and the clear filtrate alone be inoculated into animals, no results ensue, whereas a minute amount of the bacilli left behind on the filter, when inoculated into susceptible animals, surely leads to fatal disease. Here, again, we have an advance based upon—half-truth. It so happens that the filtrate from anthrax cultures contains a relatively small amount of the toxins, and under slightly different conditions of the experiment, injecting larger quantities of the filtrate, Pasteur might have killed his animals, and had he been working with other germs, for example, those of diphtheria, his demonstration would have failed. The promises were apparently most conclusive; all the same they were not by any means perfect.

So, again, to give another example in connection with typhoid. For some little time after the discovery of this germ, it was not recognized how difficult it is to distinguish it from the bacillus coli, the commonest of the inhabitants of the normal intestine. When, therefore, it was pointed out by numerous observers that typhoid bacilli were present in the stools, in enormous quantities, the conclusion was reached that it was absolutely essential to disinfect the excreta in order to prevent the spread of infection, a conclusion which it happens we now know was quite correct, only it was based upon erroneous observations. Now, after long years of patient endeavor, we are able surely to separate the colonies of typhoid and colon bacilli present in the stools, and we can surely demonstrate that they are present there, and present also in considerable numbers at a certain stage of the disease. Here, again, therefore, mistaken observation led to advance.

No one will grant more freely than I do that if the legislation regarding bovine tuberculosis was based upon an imperfect conception regarding the relative frequency of the conveyance of the disease from cattle to man, that legislation has constituted a very distinct advance. From a purely commercial aspect, whatever be the result of this active controversy, it is the duty of the Government, as it is to the pecuniary advantage of the farmer, that tuberculosis be, if possible, eradicated from or kept within low limits among our herds, and the present legislation might go much further than it does towards accomplishing this end. But if half-truths are useful, and if we have to be in the main content with them, it is the duty of the man of science to seek ever after a nearer realization of the whole truth. He must not expect to attain unto it. The whole in anything mundane seems almost beyond our grasp. Even the mathematician, with methods approaching to perfection, is not master of the mysteries of that remarkable conception, the circle. Let him strive all his days, and he will never determine the exact value of the ratio. Even now the atoms are being knocked from under the feet of the physicist. But if he cannot attain thereunto, it is for the man of science to strive ever to approach nearer to it, to be dissatisfied with half-truths. He must either accept them as adequate and get into the habit of regarding them as fixed. His new facts lead to the demonstration of the imperfection of those half-truths. He must ever be prepared to modify his views. Facts are not truths. True in themselves, they may, if insufficient, and if they do not bear upon all the factors concerned, actually lead away from the truth, and in medical as in physiological problems so many factors are involved, the half-truth is always to be guarded against.

So, gentlemen, if the views enumerated this evening are not those of the majority, if my criticisms have seemed needlessly destructive, if, indeed, those things which I have taken to be facts be not facts, I shall, notwithstanding, feel that I have not spoken in vain if I have impressed upon you the imperfect nature of the evidence upon which some of our favorite conclusions regarding tuberculosis are based, the need for further research, and the supreme need for more accurate methods of work and of thought.

Book Reviews.

DISEASES OF THE EAR. A text-book for practitioners and students of Medicine. By Edward Bradford Dench, Ph. B., M. D., Professor of Diseases of the Ear in the University and Bellevue Hospital Medical College; Aural Surgeon, New York Eye and Ear Infirmary, etc. With 15 plates and 158 illustrations in the text. Third edition, revised and enlarged. D. Appleton & Co., New York and London.

This new edition of Dench's work is a welcome addition to the library of every Otologist, and will, perhaps, be as fully appreciated by the specialist, possibly more so, as by the general practitioner; such complete text-books are really too elaborate for the busy student of medicine of to-day. The copy under review is a vast improvement over the two previous editions. It contains much new matter, has been brought thoroughly up to date and presents a more attractive appearance.

We consider it by all odds the best English text-book on Otology extant to-day, and believe it deserves to rank in the same class with that book to which we all refer for ultimate authority—Politzer. One feature we wish to especially commend to the consideration of all its possible readers, viz.: the attention given to the modern surgical treatment of purulent affections of the ear. Operative details are set forth in the clearest manner, and we think we can agree with the author in almost every particular.

ATLAS OF THE EXTERNAL DISEASES OF THE EYE. By Prof. Dr. O. Haab, of Zurich. Second edition, thoroughly revised. Edited, with additions by G. E. de Schweinitz, A. M., M. D., Professor of Ophthalmology in the University of Pennsylvania. With 98 colored lithographic illustrations on 48 plates, and 232 pages of text. W. B. Saunders & Co., Philadelphia, New York and London. Price, $3, net.

We are happy to learn that this excellent work has met with the degree of success which we predicted for it when reviewing the first edition. It fully deserves it, for it is equal to most and superior to many of the more expensive atlases that have been published. Professor Haab is to be congratulated upon the excellence of his work. The subjects to be illustrated were well chosen, and their reproduction has reached a highly artistic standard. The text is clear and succinct. Used in connection with his companion work, "Atlas and Epitome of Ophthalmology," it comprises all the instruction necessary on eye diseases for the general medical student.

BLOOD PRESSURE IN SURGERY. An experimental and clinical research. By George W. Crile, M. D., Philadelphia and London. J. B. Lippincott Co., 1903.

This volume is the Cartwright Prize Essay for 1903 done into book form. The great number of pages devoted to detailed report of the 250-odd experiments done suggest that the monograph should find its place rather on the reference than the circulating shelves. Dr. Crile has, however, given very clear, well-worded and positive statements of the conclusions his experiments warranted, and this portion of the book makes up in interest for the somewhat tiresome record of experiments on animals. Dr. Crile offers, as a deduction from his work, a positive and exclusive definition of shock. "Shock," he says, "is an exhaustion or breakdown of the vasomotor centres;" and he proceeds to eliminate one by one the other conditions which have been suggested by workers in this line as causes of shock, namely: exhaustion of heart-muscle, of the cardio-inhibitory centre and of the peripheral nerve vascular mechanism. In contradistinction to shock thus accurately defined, Dr. Crile proposes the tentative term "collapse" for the causes of more sudden fall of blood pressure due to hemorrhage, injuries of the vaso-motor centre or cardiac failure. Here the essential feature is suspension of function rather than exhaustion of centres; and, exhaustion being absent, stimulants may be of value.

Dr. Crile's findings as regards the use of strychnin are certainly definite enough. This drug was found, so far from counteracting shock, to cause it; later in the research "the most convenient and certain method of producing shock for experimental purposes was by the administration of physical doses of strychnin;" and the conclusion was reached that "it would seem to be as reasonable to treat strychnin shock by administering traumatism as traumatic shock by strychnin." That results diametrically opposed to this have recently been reached by other observers is only another example of the unsatisfactory nature of physiological conclusions. Adreaalin, Dr. Crile finds to be capable of supporting a falling blood-pressure, but its practicality as a therapeutic measure could not be established. The use of a pneumatic-rubber suit, to give external pressure and so increase the perepheral resistance, was found, both experimentally and clinically, to give good results. In *collapse*, however, (such as might be caused by rapid external hemorrhage), saline infusions and stimulants may be of use.

PSYCHIC LIFE AND LAWS, OR THE OPERATIONS AND PHENOMENA OF THE SPIRITUAL ELEMENT IN MAN. By Charles Oliver Sahler, M.D. Fowler, Wells & Co., London, New York, Melbourne.

This book is addressed to the more exquisite of Arachne's children. It is as foolish as any book on the subject.

THE SELF-CURE OF CONSUMPTION WITHOUT MEDICINE. By Charles H. Stanley Davis, M.D., Ph.D. New York, E. B. Treat & Co. 1904.

There is no need of a good book on a poor subject, and no need of a poor book on any subject. The author has set himself a stupendous task "to show how consumption, from its first beginnings to its last stages, before actual decay of the lungs takes place, can be cured in at least 95 per cent. of the cases, and this without the use of medicine." After raising such anticipations, the author dallies with his readers through six dull chapters, and in the seventh springs his method of curing 95 per cent. of consumptives in these words: "Without a full and free exposure to outside air, regardless of all matters, no case of tuberculosis ever has been cured; while with it, *and it alone,* many cases have been and may be cured." The italics are the author's, and so are the its. The book is, on all accounts, one to be condemned.

MARYLAND MEDICAL JOURNAL

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BALTIMORE, MARCH, 1904

THE TUBERCULOSIS EXPOSITION.

The Maryland Tuberculosis Exposition received the unstinted praise of discriminating observers from all parts of this country, and appears to have been duly appreciated inside the family circle of the State. Of those who watched the preparations no one doubted that the Exposition would reward the interest of physicians and special students of tuberculosis, but many doubted whether its especial message would be effectively lodged in the public mind. When, within two days, the people had paid to the Exposition the amplest tribute of interest, its sponsors were gratified beyond measure. Even the most enthusiastic among them had not expected such success.

In one respect the success was especially gratifying. It had been said that many people would not visit the Exposition for fear of contagion in the objects presented and in the people attending. It had been said also that visitors who came without fear would carry away and spread it. Precautions were taken. By common consent the pathological exhibit was made a thing apart, placarded like a powder house. Over the door it was written, "*Jederman hat am ende ein bischen tuberculose;*" but the people thronged that door, and overcame the guards, and entered in, and were satisfied. There was not a sign of flagging interest at any time in any part of the Exposition. Some of the lectures were intended for a strictly scientific audience, and the announcements were very clear upon this point. The people disregarded the warning. The lecturers were embarrassed, and said so. The managers said to themselves, "Surely this hour will kill the Exposition." But at 10 o'clock on the morning of the seventh day the Donovan room had to be abandoned, and McCoy Hall was opened to the crowd assembled to hear Osler's impromptu lecture on the history of tuberculosis.

The Exposition demonstrated that it is both expedient and practicable to admit the general public to free participation in the scientific knowledge of tuberculosis, and the demonstration is highly important in a country where all reforms wait upon public opinion. It did not appear in this experiment that the education of the public is either difficult or dangerous. The interest of the medical classes visiting the Exposition was at least as lively as that which attends college work, but had no advantage in comparison with the zest manifested by the lay public. Perhaps the unhappy familiarity of the people with tuberculosis explained in part, but it did not fully explain the popular interest. Motives of just that intimate nature did indeed bring many people to the Exposition; as the guides can testify. But a very great majority were attracted by the intrinsic interest of the subject, and would probably have been as strongly attracted by as good an object lesson on typhoid fever.

Although addressed to the public, the Exposition was not in the ordinary sense popular. Of the many persons engaged in its preparation not one was familiar with its contents, and those who knew it best wished that the collection might have been kept together long enough to be studied in detail. All who were engaged in the preparation and presentation of the Exposition are to be congratulated. For the Maryland Commission it served as a sort of official report. Some of the more striking results of their own investigations were shown in an impressive way, and prepared a widespread interest in the documentary report which they will shortly publish.

AFTER THE FIRE AND WHILE AIMING.

"Procrastination says, 'The next advantage we will take thoroughly.'"

The most comfortable reflection following the disastrous fire of February 7th is that the rulers of the city and State were in all respects equal to the emergency. Our good fortune in this respect was apparent not only in the preservation of perfect order, and the instant negotiation of urgent problems, but also in the patience of the citizens and the remarkable rise of civic courage and pride. In the experience of a life-time hardly anything can be more impressive than the history of Baltimore in February, 1904. A bewildering spectacle, an appalling disaster, and a magnificent opportunity were offered us in the space of sixty hours. We accepted the opportunity with great enthusiasm and speedily convinced the world that a model city would rise upon the devastated area. A perfectly competent Emergency Committee immediately engaged the question of improvements, obtained the very best expert advice, and made, without delay, an admirable report. Public sentiment seemed to have but one voice on the subject, and to demand that the whole plan be put into execution forthwith. The daily papers, without exception, supported the recommendations of the Committee, and urged the utmost speed in action. But the question of ways and means obtruded itself, and the voice of the objector arose. It may be that the delay is well within the bounds of necessary caution, but one is impatient to see the promise of a model city made secure, and fearful lest the opportunity may become, like the disaster, irretrievable.

DEFENSES.

Such criticisms of our fire defenses as have appeared in the public prints have been very moderate in tone and have thrown no blame upon the officers or men in this important service. It appears that we have neither sufficient apparatus nor apparatus of the best sort, but beyond this the fire department of Baltimore is entitled to only such criticism as is fairly applicable to fire defenses in general. There is, however, only a crumb of comfort in the reflection that our own failure was no more conspicuous than would have attended similar conditions elsewhere.

One should take heed of the little faults which made up so stupendous a failure. The first of these, so far as the department was concerned, was tardy notification. The fire gained headway before an alarm went in. In the second place, no one knew that an iron structure standing upon the sidewalk within a hundred feet of the burning building contained gunpowder. A fire department organized and administered on scientific principles should have known the combustion index of every square rod in the city's area. Very likely there is no fire department so accurately informed —but, nevertheless—. The explosion shivered the windows and opened up the interiors of adjacent buildings to flame and spark. No one took the measure of this great disadvantage. Perhaps no existing fire department would have done so, but, nevertheless—.

The resistance opposed to the spreading conflagration was all that should be expected of human courage and endurance. The immediate business of the fire fighting was, let us say, thoroughly well done. Should not a fire department, organized and administered on scientific principles, include men charged with important duties aside from the control of fire, as, for instance, to make and publish prognosis? The events of the first hour after the outbreak should have yielded a reliable forecast of the probabilities for the ensuing three hours. But people having important interests in the doomed area were taken by surprise. Many of them did not visit the scene, and of those who witnessed the fire many failed to appreciate its extent or gravity. Of those who recognized the danger many found their buildings fast closed or the elevators idle, and their movable property thus secured to the advancing flames. Two mounted officers could have obtained all necessary information, could have given timely warning and so prevented large losses. The fire happened in the business district, and on Sunday, but these circumstances are not extraordinary in any sense. The business district is deserted for about forty consecutive hours fifty-odd times a year.

It is conceivable that in a fire department organized and developed along scientific lines, the care of apparatus and horses and the extinction of fires might be but a small part of a year's work. An intimate and detailed study of the more or less combustible contents of every city block, and of all the determinable relations of buildings, streets and alleys would seem to be a proper part of routine work in quarters. Practical exercise in fire defense can be as well provided by design as by accident, and the practice that develops skill and resourcefulness might go ahead very well if destructive fires were ever so rare. It is conceivable that a majority at least of the fires occurring in any year might have been considered and definitely prepared for in advance, and that the records would show whether each game had been played better or worse in fact than theory.

Medical Items.

THREE bills have been offered at the General Assembly on the subject of tuberculosis. The first is a registration law. It applies to the whole State and requires physicians to notify the State Board of Health of all cases of pulmonary or laryngeal tuberculosis coming under their care. The records so obtained are not to be treated as public records, the disclosure of any personal particulars of the records being forbidden. This act also requires physicians to notify the local Board of Health whenever the house or apartments of a consumptive are vacated by death or removal. The local Board of Health is required to disinfect all apartments after the death or removal of a consumptive and it is made unlawful to let for hire any apartment previously occupied by a consumptive until after disinfection.

The second bill on this subject adds certain sections to the nuisance laws. It authorizes any person subjected to offense or danger by the careless expectoration of a consumptive, to lodge a complaint with the local health officer, whose duty it then becomes to serve a notice requiring the abatement of the nuisance, and to inflict a fine for non-compliance with the notice.

This bill further provides that upon receipt of a notification of a case of pulmonary or laryngeal tuberculosis the Board of Health shall send the attending physician a printed blank, containing directions for the care of sputa and otherwise protecting the inmates of the house. The physician may carry out these instructions or he may signify his unwillingness or inability to do so. If he carries out the simple measures to the satisfaction of the local health officer, he is paid the sum of $1.50. If the physician declines to superintend the precautions this duty devolves upon the local Board of Health. For the purposes of this act the State Board of Health is required to supply the local boards of health with sputum cups and disinfecting solution and with printed rules. The local Board of Health, in turn, distributes these supplies to attending physicians. This bill calls for an annual appropriation of $5,000.

The third of the anti-tuberculosis bills amends the existing law. The transportation companies are required to provide impermeable paper cuspidors in metal holders to a certain minimum number for each car, and to burn the cups at the end of each run. They are required also to keep printed notices conspicuously posted in each car. The State Board of Health is charged with the enforcement of this act. The act creating a tuberculosis commission is also up for re-enactment. It is amended but slightly. The next commission will take into consideration the question of a State sanatorium for tuberculosis.

CASES of plague continue to be discovered in San Francisco. Six cases occurred in February. Since the subsidence of the notorious Governor Gage and his unscrupulous State Board of Health, the announcement of a few cases of plague causes no alarm in San Francisco or elsewhere. Governor Pardee's State Board of Health deals honestly with the existing conditions.

CHICAGO'S mortality for the week ending February 27th, included 151 deaths from pneumonia, against 69 due to consumption. Since the energetic Commissioner of Health, Dr. Reynolds, dubbed pneumonia the new "Captain of the Man of Death," the disease has steadily improved its title to this distinction. It seems possible, at least, that the medical profession of Chicago is inclined to heap honors on pneumonia somewhat in excess of its claims.

ONE result of the fire has been an increased number of patients in the various hospitals, amounting in some instances to overcrowding. The amount of sickness is but slightly in excess of that which is usual at this season, but the number of persons seeking hospital treatment is largely increased.

A BILL now pending in the Legislature seeks to give the physicians of Baltimore County the authority to issue burial permits. The bill will be opposed by the State Board of Health.

AMONG asinine regulations in regard to consumption the latest is the Altoona, Pa., ordinance forbidding barbers to shave consumptives.

MARYLAND
MEDICAL JOURNAL
A Journal of Medicine and Surgery

Vol. XLVII No. 3 BALTIMORE, APRIL, 1904 Whole No. 1031

PUERPERAL ECLAMPSIA, PRESENTING SOME UNUSUAL PHENOMENA.

By H. H. Arthur, M.D.,
Associate Professor of Gynecology in the University of Maryland.

In reporting the following it is not my purpose to review in detail the various stereotyped phrases of puerperal eclampsia, compared with many of which it is not dissimilar, but to make a few brief observations concerning several noteworthy conditions not usually met with in the average case.

One of my private patients, Mrs. ——, aged twenty-three years, primipara, passed a comparatively normal pregnancy until the ninth month. Examinations of the urine failed to show any albumen or other evidence of kidney complication. At this time there developed marked edema of the feet and lower limbs, headache, nausea, and some ocular disturbance. At the same time she experienced more or less pain in the right hypochondriac region, occasionally so severe as to interfere with sleep. Urinary analysis (Esbach test) showed ⅙ per cent. of albumen per liter. After the use of diuretics and exclusion of meat from the diet, the urine became normal, and continued so until labor. As the bowels were irregular, with the passage of yellow stools, calomel was also administered. This was followed by improvement in the intestinal conditions, but the hepatic pain continued nearly to the date of confinement. Delivery was accomplished without incident at 11 o'clock A. M., September 17. About 12 o'clock, noon, convulsions began and continued until the early morning of the 18th. There occurred in all *eighteen* convulsions, the patient being practically comatose for about 12 hours. Cerebral symptoms began to abate about noon of the 18th, and she made an uneventful recovery.

The treatment consisted in chloroform by inhalations, morphine hypodermically, chloral and potassium bromide per rectum. During intervals between the first convulsions, potassium acetat and infusion of digitalis were given by mouth, and also of water in large amount. As convulsions continued she was given an infusion (into breasts) of 1100 cubic centimeters normal salt solution, and later, one liter per rectum. The effect of this was to markedly increase the urinary secretion. Owing to increased arterial tension and rapid, bounding pulse, I gave her 15 minims of tincture of veratrum viride, followed by several five-minim doses two hours apart. This reduced the tension, lowered the pulse rate, and prolonged the interval between convulsions. As her general condition did not improve, and the coma, from which she was at first easily aroused, became more marked, I, later in the afternoon, resorted to venesection, and removed about 400 cubic centimeters of very dark blood. This was followed later by gradual improvement in the coma, while the convulsions were less severe. As a result of the venesection the pulse was reduced to 92, and by morning of the 18th, four hours after the last convulsion, was soft and compressible.

While I have had the opportunity of observing and treating quite a number of cases of eclampsia, I have had little experience with veratrum viride, but it was effectual in influencing the pulse and convulsions seemed evident, though a positive claim concerning its value is necessarily invalidated by the venesection.

All treatment was discontinued after noon of the 18th, except the diuretics. Specimens of urine were obtained by catheterization every few hours during the attack, and of these I select several that may be regarded as representative:

17th, 1 P. M., 10 ounces contained granular casts; no albumen.

17th, 3 P. M., six ounces contained trace of albumen; granular casts.

17th, 5 P. M., six ounces contained 1/6 per cent. albumen (per liter); granular casts.

Considerable urine was voided involuntarily during the following evening and night.

Specimen (by catheter) 2 A. M. on 18th contained about 1/6 per cent. albumen, epithelial, granular and hyaline casts, and red-blood cells.

18th, 7 A. M., urine showed the same.

19th, specimen showed *no albumen,* and a few days later the urine was normal.

It is not an infrequent occurrence that the urine of such patients shows nothing abnormal prior to labor, and they experience sometimes no subjective symptoms, nor develop edema. Another patient delivered about the same time showed quite a precipitate of albumen, epithelial, granular, and hyaline casts, blood casts and free red-blood cells about one week before labor. Under milk diet, diuretics, and free catharsis the conditions improved, and the seemingly inevitable eclamptic attack was averted. This labor, although the patient was a primipara, was comparatively short, and the urine, post-partum, showed no trace of albumen, or any microscopic findings. Many cases show albumen in variable quantity, casts, etc., in advance of labor, and, as I have observed in a large number of urinary analyses, when either, in the course of events, develops eclampsia, the urine subsequently secreted is, as a rule, markedly diminished in amount, and contains a high percentage of albumen.

The urine of this eclamptic patient during the last few weeks of pregnancy showed, notwithstanding the subjective symptoms, only a small percentage of albumen, and that disappeared about 48 hours prior to labor. We would expect, after a series of 18 convulsions, to find a high percentage of albumen, but *none* of the many specimens of urine obtained by catheterization at two and three hour intervals during the attack showed at any time more than ⅙ per cent. of *albumen.*

As previously noted, a comparatively large quantity of urine was secreted throughout the attack. Diuresis was no doubt greatly influenced by the saline infusion and high enema, and by the diuretics given during intervals between the early convulsions. While not presuming to offer any adequate explanation of the phenomenon, it is more than probable that the persistently low percentage of albumen was, to some extent, materially influenced by the dilution incident to such free diuresis.

Notwithstanding the removal of a certain part of the toxic element by venesection, and the replacing of the blood thus withdrawn by normal salt solution, and considering the subsequent moist skin, free perspiration about the head and face, and comparatively free secretion of urine, the kidneys failed to satisfactorily eliminate the toxin, as is demonstrated by the numerous recurring convulsions and the continued coma.

Epigastric pain occurs in many cases. This was not complained of by this patient, but, as already stated, pain referable to the hepatic region was more or less severe during the last week of pregnancy. Several days before labor this pain practically ceased, and it is interesting to note that the albumen disappeared from the urine about the same time.

Considering the pathology of eclampsia, and particularly the changes occurring in the liver (whether this organ is primarily or secondarily concerned), its involvement in this instance, coincident as it was with albuminuria, suggests its participation as a causative factor. In the other case alluded to as showing the presence of albumen, cast and blood cells, but which did not develop eclampsia, an attack was to be expected, if eclampsia is dependent upon renal insufficiency. In that case the patient experienced no subjective symptoms whatever, nor any edema. On the other hand, the subject of this paper presented only moderate evidence of kidney involvement, her subjective symptoms being mainly referable to the liver. The condition cleared up under free mercurial catharsis a few days before labor, only to be succeeded by postpartum eclampsia. The phenomena in this case would, I think, justify the conclusion that the liver was more seriously affected than the kidneys.

1516 West Lexington street.

AN ACT TO PROTECT CITIZENS OF MARYLAND FROM CERTAIN COMMUNICABLE DISEASES, ESPECIALLY TUBERCULOSIS OF THE LUNGS AND LARYNX.

SECTION 1. Be it enacted by the General Assembly of Maryland, That from and after the date of the passage of this act, any person affected with any disease whose virus or infecting agent is contained in the sputum, saliva, or other bodily secretion or excretion, who shall so dispose of his sputum, saliva, or other bodily secretion or excretion as to cause offense or danger to any person or persons occupying the same room or apartment, house or part of a house, shall, on complaint of any person or persons subjected to such offense or danger, be deemed guilty of a nuisance. And any person subjected to such a nuisance may make complaint in person or writing to the Commissioner of Health of Baltimore city, or to the local health officer of any city, town or county in the State of Maryland where the nuisance complained of arises or exists. And it shall be the duty of the Commissioner of Health, or of any local health officer receiving such complaint, to investigate, and if it appears that the nuisance complained of is such as to cause offense or danger to any person occupying the same room, apartment, house or part of a house, he shall serve a notice upon the person so complained of, reciting the alleged cause of offense or danger, and requiring him to dispose of his sputum, saliva, or other bodily secretion or excretion in such a manner as to remove all reasonable cause of offense or danger. And any person failing or refusing to comply with orders or regulations of the Health Commissioner of Baltimore city, or of the health officer of any city, town or county requiring such nuisance to be abated, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined ten dollars; provided, that the requirements of this section shall apply only to pulmonary and laryngeal tuberculosis, pneumonia, influenza, and such other diseases as the State Board of Health may, from time to time, determine to be communicable by means of sputum, saliva, or other bodily secretion or excretion.

SEC. 2. It shall be the duty of the physician attending any case of pulmonary or laryngeal tuberculosis to provide for the safety of all individuals occupying the same house or apartment, and if no physician be attending such patient, this duty shall devolve upon the local health board; and all duties made incumbent upon the physician in the following sections shall be performed by the local board of health in all cases of pulmonary or laryngeal tuberculosis not attended by a physician, or when the physician is unwilling or unable to perform the duties specified.

SEC. 3. It shall be the duty of the local board of health to transmit to the physician reporting any case of pulmonary or laryngeal tuberculosis a printed report, after the manner and form to be prepared and authorized by the State Board of Health, naming such procedures and precautions as in the opinion of the State Board of Health are necessary or desirable to be taken on the premises of said tuberculous case; and it shall be the duty of the State Board of Health to print and keep on hand a sufficient number of such report blanks and to furnish the same in sufficient numbers to any local board of health upon due requisition of the latter. Upon receipt of the blank report the physician shall fill, sign and date the same, and return to the local board of health without delay; provided, that if the attending physician is unwilling or unable to undertake the procedures and precautions specified, he shall so state upon this report, and the duties herein prescribed shall then devolve upon the local board of health.

Upon receipt of this report the local board of health shall carefully examine the same, and if satisfied that the attending physician shall have taken all necessary and desirable precautions to insure the safety of all persons living in the house or apartments occupied by the consumptive, and to insure the safety of the people of the State of Maryland, the said local board of health shall issue an order on the State Board of Health in favor of the attending physician for the sum of one dollar and fifty cents ($1.50), to be paid by the State Board of Health out of a fund hereinafter provided.

If the precautions taken by the attending physician are, in the opinion of the local board of health, not such as will remove all reasonable danger, or probability of danger, to the persons occupying the said house or apartment, the local board of health shall return to the attending physician the report blank with a letter specifying the additional precautions which they shall require him to take; and the said attending physician shall immediately take the additional precautions specified, and shall record and return the same on the original report blank to the local board of health.

It shall further be the duty of the local board of health to transmit to the physician reporting any case of pulmonary or laryngeal tuberculosis a printed requisition form, which shall be prepared by the State Board of Health, and issued in sufficient number to any local board of health upon due requisition of the latter. Upon this requisition blank shall be named the materials kept on hand by the local board of health for the prevention of the spread of the disease; and it shall be the duty of the State Board of Health to purchase such supplies as it may deem necessary from the fund hereinafter provided, and to supply them to any local board of health upon due requisition of the latter.

Any physician may return a duly-signed requisition to the local board of health for such of the specified materials and in such amounts as he may deem necessary in preventing the spread of the disease, and all local boards of health shall honor, as far as possible, a requisition signed by the attending physician in such case.

It shall be the duty of every local board of health to transmit to any physician reporting any case of pulmonary or laryngeal tuberculosis, or to the person reported as suffering from this disease, provided the latter has no attending physician, a circular of information prepared and printed by the State Board of Health, and which shall be furnished in sufficient quantity to any local board of health on due requisition of the latter.

This circular of information shall inform the consumptive of the best methods of cure of his disease, and of the precautions necessary to avoid transmitting the disease to others.

SEC. 4. Any physician, or person practising as a physician, who shall fail to execute the duties prescribed by this act, or who shall knowingly report as affected with pulmonary or laryngeal tuberculosis any person who is not so affected, or who shall wilfully make any false statement concerning the name, age, color, sex, address, or occupation of any person reported as affected with pulmonary or laryngeal tuberculosis, or who shall certify falsely as to any of the precautions taken to prevent the spread of infection, shall be deemed guilty of fraud, and on conviction thereof shall be subject to a fine of one hundred dollars, or to imprisonment not exceeding six months, or to both fine and imprisonment, in the discretion of the Court.

Current Literature.

REVIEW IN MEDICINE.

Under the Supervision of Thomas R. Brown, M. D., Baltimore.

THE HOME AND ITS RELATION TO THE TUBERCULOSIS PROBLEM.

Osler *(Medical News,* December 12, 1903) publishes his brilliant lecture on this subject, which was delivered under the auspices of the Phipps Institute of Philadelphia. Every physician should read this brilliant exposition of the most scientific and practical methods of dealing with this, perhaps the greatest problem confronting the medical fraternity. Osler first accentuates the fact that in its first important aspects the problem of tuberculosis is a home problem, while the present crusade against it has three specific objects: first, educational—the instruction of the profession and the instruction of the people; second, preventive—the promotion of measures which will check the progress of the disease in the community; third, curative—the study of methods by which the progress of the disease in individuals may be arrested or healed.

After briefly reviewing the researches which have made the scientific study of these problems possible, Osler calls attention to the three great contributions from America—Trudeau's work on the sanatorium treatment of early cases, the work of Biggs and his associates in New York City in demonstrating how much can be done by official organization, and Flick's work on the dangers of the house in the propagation of the disease. Pathological studies, especially those of Naegeli, have shown that in practically all adults over forty years of age evidences of tuberculosis are present, showing the extraordinary susceptibility of man to tuberculous infection and his equally extraordinary degree of resistance. As to the mode of infection, Osler strongly inclines to the view that aërial convection and primary inhalation play the most important *rôle,* and opposes von Behring's views that the infection is usually carried by milk.

After giving the results of the investigations carried on under his auspices in Baltimore in regard to the character of the homes of tuberculous patients as regards bad location, insufficient light and ventilation, overcrowding, and personal and household uncleanliness, Osler gives some rules of practical advice how to combat these conditions: "First, by an educational health campaign in the homes. To be successful such a campaign must be carried out by the board of health, and a staff of trained visitors, women preferably, should do the work. To carry this out effectually there should be, secondly, in all cities a compulsory notification of cases. In most cities the powers of the health boards should be greatly enlarged, so as to deal efficiently with the question of proper disinfection of the houses occupied by tuberculous patients. The question of the housing of the poor needs attention, particularly in the matter of proper control of tenements and the regulation by law of the number of persons in each house; by placing upon the landlord the responsibility of providing, under the control of the board of health, a clean, wholesome house for a new tenant; the wholesale condemnation of unsanitary streets and blocks and the rebuilding by the municipality, as has been done in Glasgow and elsewhere."

As to the relation of the general practitioner to this disease, it is of such paramount importance as regards cure and prevention that two points should be especially impressed upon him—first, that an early recognition of the disease can only come from better methods of practice and greater attention to the art of diagnosis, and second, the necessity for a more masterful management of the early cases.

In a few words the essentials of the whole treatment of consumption in small towns, country places, and suburbs of our large cities are "the confidence of the patient, since confidence breeds hope; a masterful management on the part of the doctor; persistence—benefit is usually a matter of years, absolute cure a matter of many years; sunshine by day, fresh air night and day, rest while there is fever, breadstuffs and milk, meat and eggs."

Osler's paper is so scientific, practical and inspiring that it should be read by every physician, especially by those in Maryland, who must be in a most receptive mood for such words after visiting and thinking over the Tuberculosis Exposition and the lessons that it taught.

TYPHOID FEVER.

Fulton *(Journal of the American Medical Association,* January 9, 1904) discusses some unconsidered hindrances in the prophylaxis of typhoid fever. The first hindrance he considers is a mistake in diagnosing the disease—a mistake which was strikingly exemplified by the results in the Spanish-American War, where one-half of the cases were not correctly diagnosed by the regimental surgeon. As Fulton well says, "typhoid fever is taught too much, is studied far too little." The reason for the mistaken diagnosis in the majority of cases was that the disease, which was in reality typhoid, was considered to be malaria, and was treated accordingly. Fulton then furnishes a series of most interesting charts regarding the comparative mortality in the different sections of the country reported as due to typhoid and as due to malaria, and he believes that of all the mortality charged in the South to malaria, half, perhaps, is really due to typhoid fever. "To the large deficiency in the typhoid mortality which is fairly ascribable to the malaria delusion one must add a further correction for the mistaken diagnosis of typhoid to the extremes of life. With respect to children the conviction is gradually settling in the minds of pediatrists that typhoid is common in childhood. When to these sources of error in the diagnosis of typhoid the ambulant and anomalous cases are added, the total default in diagnosis is seen to amount to at least 50 per cent. of the cases actually occurring."

The next point in which the medical profession is but half informed is as to the preferred habitat of typhoid fever, and, as Fulton shows by a large array of figures and charts, typhoid fever has at the present time and in this country a heavier incident in small communities and rural districts, and probably this has been the case for a long time. "When we consider the rank of typhoid fever among all the causes of death, we find that rural typhoid fever is credited with sixty-two in every 1,000 deaths, against thirty-eight per 1,000 for urban typhoid."

In conclusion, Fulton insists that the first step in the restriction of typhoid fever must fail for lack of diagnostic skill in the rank and file of the medical profession. The correction of this delinquency does not wait on improved methods of clinical or laboratory diagnosis, but on a general realization of the ubiquity and perennial activity of typhoid fever and on the lumbering advance of reform in medical education.

A subsidiary conclusion from this part of the present study is that a very large majority of the deaths attributed to malaria are due to causes in which malaria does not even participate.

The second important conclusion drawn from a study of the distribution of typhoid mortality is that the infection is more heavily seeded in smaller communities, and that the propagation of the disease is in general from the country to the town rather than from the town to country. The explanation of this fact is probably found in the greater care given to the disposal of human excrement as communities grow more populous.

The prophylaxis of typhoid fever consists essentially in defense against excremental contamination, and precisely as the barriers are more or less remote from the sources of infection is the defense less or more effective. In this view of the prevention of typhoid fever it must appear that, notwithstanding the very great value of the defense on which cities most rely, these defenses do not, and by their widest conceivable extension cannot, satisfy the requirements of a rational prophylaxis of typhoid fever. In town and country alike the appointed time and place against the spread of typhoid fever is whenever and wherever a case of typhoid fever is recognized. If there is one direction in which more than another the political influence of great cities should be exerted it is to bring the rural districts and small communities under legal obligation to render strict accounts of deaths and the causes of death, and to take and give good heed to the preventable diseases at the time and place of their occurrence.

This article of Fulton's is very suggestive and should be read by all physicians interested in the broader aspects of the typhoid problem.

THE DIFFERENTIAL DIAGNOSIS OF TYPHOID FEVER IN ITS EARLIEST STAGES.

Rucker *(American Journal of the Medical Sciences,* January, 1904) furnishes a well-written and carefully-prepared article on the early diagnosis of typhoid fever, in which the various mistakes in diagnosis are taken up one by one and carefully considered. The conclusions of this article, which is of especial value as regards the bacteriological study of typhoid fever and the differentiation of the typhoid bacillus from micro-organisms which closely resemble it, notably the paratyphoid bacillus, are as follows:

1. There is no single symptom on which alone an early diagnosis can be made. It is only by careful consideration of the symptom complex that a clinical diagnosis can be arrived at.

2. The most trustworthy as well as the earliest sign of typhoid fever is the presence in the circulating blood of the bacillus of Eberth.

3. The demonstration of the bacillus of Eberth in the blood is not beyond any fairly well-equipped laboratory.

4. The bacillus of Eberth is found in the feces later than in the blood, but with comparative ease. The presence of the bacillus typhosus in the feces is of great value as a corroborative sign.

5. The presence of the bacillus typhosus in the rose spots is a trustworthy sign, but has no advantages over the examination of the blood in other localities.

6. The serum reaction of Widal is seldom demonstrable during the earlier stages of typhoid fever. It is of value only in the higher dilutions.

* * *

THE OPERATIVE TREATMENT OF NEPHRITIS.

Physicians and surgeons who are interested in the operative treatment of nephritis, which has recently been so much talked about, will find an excellent review of the subject in the *Centralblatt für Grenzgebite der Medizin und Chirurgie,* Nos. 18-23, 1903. In this article sixty-six cases have been collected from the literature and a *résumé* of each case given. Briefly speaking, the results in these sixty-six cases were as follows: Thirty-two were cured, fourteen improved, seven were unimproved, and thirteen died. In all these cases the diagnosis of nephritis had been made either by the examination of the urine or other symptoms or by the condition of the kidney itself. Of these sixty-six cases, eight were cases of acute parenchymatous nephritis, and of these six were cured, while none died. There were seven cases of chronic parenchymatous nephritis, of which four were cured, one improved, and two died. In the twenty-four cases of chronic diffuse nephritis, five were cured, ten improved, and two unimproved, while seven died. In twenty-seven cases of chronic interstitial nephritis, fifteen were cured. Thus it will be seen that in regard to cures the cases of acute parenchymatous nephritis made the best showing, those of chronic diffuse nephritis the worst. Especially striking were the results in chronic interstitial nephritis, since this disease is usually considered incurable. Expressed in percentages, the cures were 75 per cent., 56 per cent., 21 per cent., and 63 per cent., respectively, in the different varieties of nephritis, and the mortality 12 per cent., 28 per cent., 29 per cent., and 11 per cent., respectively. Of the sixty-six cases, 50 per cent. were cured, 21 per cent. improved, 10 per cent. unimproved, while 19 per cent. died. In the nineteen cases where the kidney was firmly adherent to the surrounding tissues 56 per cent. were cured. Of the eighteen cases which were operated on on account of hemorrhage, twelve were cured, six died, while of the twenty-three cases operated on because of hemorrhage and renal pain, fifteen were cured, five improved, one unimproved, and two died. Of the fourteen cases operated on because of pain, eleven were cured, one improved, one unimproved, one died. Of the thirty-five cases in which operation was performed because of symptoms of nephritis, and not because of local symptoms, nineteen were cured, eight improved, five unimproved, and three died.

REVIEW IN SURGERY.

Under the Supervision of Hugh H. Young, M. D., Baltimore,
Assisted by J. W. Churchman, M. D.

SUBPARIETAL INJURIES OF THE KIDNEY. By Francis Watson, M. D. *Boston Medical and Surgical Journal,* Vol. CXLIX, No. 2, pp. 29-35, and No. 3, pp. 64-71.

This article presents the subject of subparietal kidney injuries with completeness, the conclusions given being drawn from an analysis of 660 cases in the literature, together with six cases from the author's experience here reported for the first time. The article is thorough, well written, temperate and convincing. Dr. Watson finds that the reported cases show that serious injury or laceration of the kidney may be produced by a very slight force out of all proportion, in its degree, to the traumatic result. Kidney laceration may be the only result of blows on the front of the abdomen, and when a *single* intraperitoneal organ is injured in association with kidney laceration it is always on the same side as the injured kidney. Abdominal symptoms (tympanites, rigidity, etc.) may be present without intraperitoneal lesion, but their early onset, short duration, and non-progressive character differentiate them. The tumor in the loin may appear early or late, and is due to hematonephrosis, hydronephrosis, perinephritic abscess, or perirenal hematoma. The mechanism of kidney laceration is not easy to understand. Occasionally it results from direct impact of the ribs, but the more usual cause is hydraulic pressure exerted through the full blood vessels and pelvis of the kidney. Blood appears either in the urine (hematuria was present in 80 per cent. of the cases) or as perirenal, intrarenal or intraperitoneal hemorrhage. Death was caused most often in the uncomplicated cases by hemorrhage, sometimes from the kidney itself alone, sometimes from a lacerated peritoneum or intraperitoneal organ. Suppuration was also a factor in the mortality, appearing as pyonephrosis, perinephritic abscess, and suppurative nephritis. Some of the patients died with anuria, the result either of actual obstruction to the ureter (by clot or destruction of its continuity) or of a reflex inhibition from the injured to the healthy side. Peritonitis caused death in some of the cases.

With expectant treatment the death-rate was somewhat high, but relatively low with operative interference other than nephrectomy. Dr. Watson's operative advice is: In cases with suspected intraperitoneal complications do a laparotomy immediately; in uncomplicated cases use the lumbar incision primarily. Of 603 cases, 191, or 31 per cent., were fatal, but 81 per cent. of the patients treated expectantly died, while only 7 per cent. of the uncomplicated cases treated by operations other than nephrectomy terminated in this way.

Of the author's six cases, two died—one from peritonitis, four days after the injury, and one from splenic hemorrhage. Primary abdominal nephrectomy was done in both the fatal cases, and there was associated injury of the spleen in both. Lumbar nephrectomy and secondary lumbar nephrectomy was done in one case, suture of the kidney wound through a lumbar incision in a second, lumbar nephrectomy in a third, and one patient (in whom there was associated cerebral concussion, a small tumor in the loin, and hematuria lasting four days) was treated expectantly, with recovery.

Following contusion the kidney is injured more often than any other abdominal organ, and the associated lacerations most often affect the liver in connection with the right kidney and the spleen in connection with the left.

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CONTRIBUTION A L'ETUDE DES ABSCES PERINEAUX ET DES PHLEGMONS DIFFUS D'ORIGINE URETHRALE. Par Motz et Bartrina. *Annales des Maladies des Organes Génito-Urinaires*, No. 21, November 1, 1903.

Perineal abscess is a condition which may present itself to the general practitioner as well as to the specialist, and an intelligent idea of its etiology and relation to urethritis is important for the majority of medical men. Dr. Motz's article—which is almost unique in its really novel content—is written in the charmingly lucid style so characteristic of French articles, and the new position of the author is clearly and convincingly stated. The results obtained are based on the study of pathological specimens in the Musée Guyon. Dr. Motz finds that the popular idea about the formation of perineal abscess is all wrong, and that Hunter, who insisted on the periurethral origin of this condition, was really thinking in the right direction. Perineal or "urinary" abscess is usually explained by a rupture of the urethra brought about by stricture, distal, and a strongly contracting bladder proximal to it. Through the rupture floods the urine, and hence the "infiltration." The fact, however, that perineal abscesses form without urethral rupture, and that no rupture takes place in a strictured ureter with a strongly-contracted distending kidney behind it, led Motz to look for the etiology of these abscesses somewhere outside of the urethra, and his specimens solved his problem clearly for him.

Perineal abscesses start, he finds, in some inflammatory condition of the "carrefour glandulaire urogénital," made up of the seminal vesicles, the prostate, the masses of Littré's glands in the membranous urethra, Cowper's glands, and intrabulbar glands (aberrant glands of Cowper). "Urinary" abscess is due, therefore, to a suppurative littritis, cowperitis, bulbitis, or periprostatis, and "infiltration of urine" is really a misnomer for a condition which is actually an edematous phlegmon caused by organisms, the urine being quite secondary ("acute septic edema of urinary origin"—Albarran). This doctrine is not pure theory, but is supported, if not, indeed, first suggested, by the pathological collection studied. Suppurative lesions (acute and chronic) involving everyone of these periurethral structures (either alone or with the others) were found on careful examination. In some cases they connected with the urethra and in others they did not, but the specimens proved conclusively that periurethral suppuration as the origin of "urinary" abscesses was perfectly possible without any break in the community of the urethra, which agrees entirely with Albarran's finding that the serous fluid with which the boggy perineal cellular tissue is, in these cases, filled contains no urine. Motz thinks that the infection reaches the periurethral structures via their excretory ducts—all of which, of course, reach the urethra.

The therapeutic advice with which Dr. Motz concludes is this: In case of stricture always expect glandular suppuration, and examine (rectally and perineally) the prostrate and Cowper's glands with a view to early treatment if they are involved.

REVIEW IN DISEASES OF CHILDREN.

Under the Supervision of José L. Hirsh, M. D., Baltimore.

SOME CASES OF INFANTILE NEPHRITIS. Fry and Martin. *Archives of Pediatrics,* January, 1904.

An examination of the literature of nephritis in infancy reveals it to be surprisingly deficient. There seems never to have been published any account whatsoever of a systematic examination of the urine in infants with a view of ascertaining both its general character, quality, abnormal constituents under varying conditions of health and disease, combined with a pathological examination of the children who have subsequently died from various causes. One of the difficulties encountered in such clinical investigations is the unsatisfactory means hitherto devised of gathering the urine. The writers assert that *reflex stimulation* upon the bladder or upon the meatus would often promote the excretion of urine with some force, and the stream could be made to flow directly into the bottle held for that purpose. This stimulation can be obtained by the application of cold above the pubis or by the mere manipulation of the orifice itself.

One hundred infants under three months of age were examined in all, including both bottle and breast fed.

The specific gravity of these cases averaged 1,006; the highest 1,028, the lowest 1,001.

Sixty-four per cent. of all examinations showed acid urine; neutral, 36 per cent.; there was none alkaline.

Albumen was present in 19 per cent. of cases. Of these, fifteen were bottle-fed children and four were breast-fed. Six of the nineteen occurred in infants under ten days of age, five before the end of the first month, and eight during the second or third month.

Of these nineteen cases with albumen, seventeen had also casts, hyaline and granular mainly; a few epithelial casts, but no blood casts. Of the one hundred cases, however, thirty-one had casts, *i. e.,* fourteen had casts without albumen. Uric acid was abundant in twenty-six cases. When uric acid was in abundance only a few—that is, three—escaped some evidence of nephritis or renal irritation. Of the twenty-six cases containing a large amount of uric acid, nineteen died and autopsies were obtained on seven. In each of these there were uric acid and acid infarcts and parenchymatous nephritis. In three of the cases there was, in addition, an acute interstitial nephritis. Apart from the nineteen that died, six others had clinical evidences of nephritis, with marked edema about the face and limbs, as well as the signs in the urine. Whatever may be the relation of uric acid to nephritis, one can say that the nephritis which occurs in infants is not alone associated with the toxic conditions incident to marasmus.

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THE PROPHYLACTIC USE OF DIPHTHERIA ANTITOXIN IN SCHOOL CHILDREN. Augustus Caille. *Archives of Pediatrics,* October, 1903.

The writer suggests a new use for this agent by advocating an immunizing injection for young school children once or twice during the year—for instance, in November and February—with the hope of preventing infection from primary diphtheria or croup, and furthermore with the hope of lessoning the mortality of the severe forms of scarlatina and measles, a large proportion of such cases being complicated by diphtheria from the beginning or in the course of the disease. In such cases we often observe an overwhelming sepsis, with delirium and cardiac failure. The mortality from scarlet fever plus diphtheria and measles plus diphtheria is quite high, and the writer is of the opinion that this mortality can be markedly reduced by means of protective inoculations of diphtheria antitoxin. Such prophylactic management will have no effect upon pure and simple scarlatina or measles, but will certainly create more or less immunity as regards grave diphtheritic complications.

During the past two years the writer has followed out this line of thought and has immunized a number of school children twice during the school year. No figures are given, for no one can tell what might or might not have happened. It may be stated, however, that not one of the children contracted primary or secondary diphtheria, and in no case was there the least unpleasant or unfavorable reaction after the protecting injection. The writer has every confidence in the feasibility of this plan for communities in which diphtheria is endemic or epidemic.

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THE RESULTS OF SERUM TREATMENT OF SCARLET FEVER IN THE CHILDREN'S HOSPITAL IN VIENNA. Th. Escherich. *Wiener klin. Wochenschrift,* 1903, No. 23.

The author records his observations of 112 cases of scarlet fever in which the serum of Moser was used in treatment. In general the results were good. The serum was used in doses of 100 to 200 cm. In order to test its merits to the fullest extent, Escherich used only the very severe cases of scarlet fever, those in which the toxic symptoms predominated. In these cases he claims the serum works almost like magic—that is, if it is given early and in full doses. A few hours after injection there is a fall in temperature, a slowing of the pulse and respiration, a disappearance of somnolence and delirium—in short, a marked change for the better.

According to the writer's ideas, we have reached a turning point in the treatment of scarlet fever. Of course, there are yet certain objections to be met, such as the necessity for large dosage, the occasional unpleasant complications, and the high price of the serum, yet the same objections were first noted in the use of antidiphtheritic serum, and the author believes the day not far distant when the serum of Moser will stand in the same relation to scarlet fever that antidiphtheritic serum does to diphtheria.

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STATISTICS AND ETIOLOGY OF HEART DISEASE IN CHILDREN. J. Cassel. *Zeitschr. f. klin. Med.,* Vol. XLVIII, 1903.

Cassel made an exhaustive study of 108 cases of heart disease in children. The sexes seemed to be equally involved, there being fifty-seven boys and fifty girls.

Of the 107 cases, twenty-six were congenital and seventy-seven acquired; four were doubtful. The congenital cases included about one-fourth of the cases. The decision whether an individual case is congenital or acquired has not only a scientific, but also a practical interest on account of the uniform bad prognosis of the former. Only a small proportion of the latter lived to puberty.

The author was able to corroborate the old observations that the heart disease of the first four years of life is in a majority of instances of the congenital type. Of his twenty-six congenital cases, nineteen were observed at this time of life, while of the seventy-seven acquired cases only six were observed in the first four years. Of the twenty-six congenital cases there were thirteen boys and thirteen girls. The most constant and most characteristic symptom in these cases was the cyanosis, which, however, in certain cases was not observed until later in childhood. Less characteristic is the drumstick fingers, which may also be found in chronic pulmonary affections and hypertrophic cirrhosis of the liver.

Abnormally loud systolic murmurs in infants and children are almost invariable signs of the congenital nature of the affection. All these murmurs, as well as the musical murmur, are, when found in children of two to three years, of great diagnostic importance. This kind of murmur was noted in twenty of the twenty-six cases; in the remaining six, one of which was a dextrocardia, a clear, slight murmur was noted. The author likewise noted that all murmurs may be absent in typical congenital cases. Twelve cases showed the combination of cyanosis and systolic murmurs. In eight cases the murmur was heard with equal intensity all over the heart; in six cases loudest at the apex; in five most intense at the right pulmonary, and in six at the left pulmonary valve. The hypertrophy of the heart, in contrast to the acquired form, is rather an exception in the congenital variety. In those cases in which it was found it was the right, and not the left ventricle which showed any evidences of hypertrophy.

Of the seventy-seven cases of acquired heart disease, there were forty-four boys and thirty-three girls; but six were present under five years of age. Acute rheumatism stood in etiological relation in 62 per cent. of the cases. There were sixty-eight cases of polyarthritis rheumatism acuta and seven cases of acute monarticular rheumatism. The fact that acute rheumatism is seldom seen under five years of age explains the seldom occurrence of acquired heart disease at this time of life.

Cassel calls attention to the relationship of rheumatism, endocarditis, and chorea. Among the seventy-seven cases there were thirty-eight cases of chorea (eleven boys and twenty-seven girls). He never saw chorea in children under five years. Of these thirty-eight cases, only fifteen had suffered from rheumatism, and of these there were nine children who had the trio—rheumatism, endocarditis, and chorea. After other infectious diseases chorea was noted seven times; after trauma, once; chorea without valvular disease, fourteen times.

The writer calls attention to the fact that in certain families there is a disposition to rheumatism and chorea, some of the members being affected with the former, others with the latter. While in the majority of cases the chorea in children usually runs its course in six to twelve weeks, the author met two cases of chorea paralytica.

While all children who had gonorrhea were examined for endocarditis, the author has never seen such a case in children. The other infectious diseases of children are seldom associated with endocarditis, although Cassel reports four cases following scarlet fever.

Of the valvular lesions the mitral valve was affected in the majority of cases (seventy-three times in the seventy-seven cases), fifty-eight times mitral regurgitation, twelve times stenosis, and in three cases regurgitation and stenosis together. Presystolic murmurs at the apex was not observed before the seventh year.

Incompetence of the aortic valve was observed but four times—three cases of regurgitation, one of stenosis.

In three cases, besides the valvular lesion, hemiplegia was noted—very probably embolic in nature.

Of the seventy-seven cases of acquired valvular lesions, twenty are still alive and enjoy comparatively good health, thirteen have died, and the fate of the others unknown.

In young individuals restoration of function of diseased valves may occur and a cure result.

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A STUDY OF TUBERCULOUS INFECTION IN CHILDREN. F. M. Pottenger. *New York Medical Journal*, March, 1903.

Pottenger asserts that it is highly probable that many cases of tuberculosis in adults have their origin in childhood, and a study of the latter is therefore of double importance. Statistics show:

1. That tuberculosis occurs often in children. Of children who died in the last three months of their first year, 25 per cent. died of tubercular infection; also in the second and third year tuberculosis finds many victims.
2. In almost all cases of tuberculosis the lymph glands are

involved, and it is highly probable that these are the seat of the primary infection.

3. Nearly all children show in the first years enlarged glands. Of these 60 to 70 per cent. are tubercular.

4. A large percentage of such children die later of tuberculosis, the origin of which is in these glands.

The infantile organism offers many favorable ports of entry to the tubercle bacillus. The young tissues are succulent and offer but little resistance. Bacilli are inspired, swallowed, and perhaps taken in through open wounds; they get into the lymph glands and multiply there. The enlarged tonsils and adenoid tissues may be the seat of entrance. Playing on the floor, they carry their dirty hands to their mouth and infect themselves with bacilli. (In sixty-six children examined for this purpose, in fourteen tubercle bacilli were found under the nails.) A second point of importance is that infection often occurs at a time when the child is most apt to have gastro-intestinal catarrh, *i. e.*, in the second year of life. According to these observations the importance of prophylaxis in childhood is evident.

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION IN CLINICAL MEDICINE AND SURGERY.

MEETING HELD FRIDAY, DECEMBER 9, 1903.

A Case of Ankylostomiasis—Dr. A. D. Atkinson.—The patient was a man, aged thirty-four years, who had traveled a good deal by sea and had come to Baltimore from the West Indies. He was admitted with fever, weakness and shortness of breath. On examination, he was pale, with muddy sclerotics and infected eyes. The leucocytes were 11,600. Intracellular malarial parasites were found, but an eosinophilia (which had been suspected from the fresh-blood examination and was confirmed by differential count) led to careful examination of the stools, where eggs of ankylostoma were found. Thymol and magnesia were given, and the worms appeared in the stools in abundance. The case is still in the hospital, but has improved so much that eggs can only occasionally be found in the stools. The leucocytes averaged about 12,000 for the first six weeks, and an eosinophilia (5 to 11 per cent.) has always been present. Extensive poikilocytosis is also to be observed. The literature of ankylostomiasis has been extensive since the publication of Stiles' work, and it is probable that many of the cases have heretofore been called malaria. Stiles defines it as "a specific zoösporadic disease occurring in dry, sandy regions and caused by the hookworm." Its synonyms are Egyptian chlorosis, St. Gothard or tunnel anemia (from the fact that it was carried into Germany by workmen from the St. Gothard tunnel), brickmakers' anemia, miners' cachexia and mountain anemia. The chief symptoms are anemia. dyspnea, edema, collicky pains in the abdomen and malaise. The disease was first fully described in Italy in 1843, but Stiles records its mention by a German clergyman as early as 1782. Unciniriasis americana is, according to Stiles, a distinct species of the family strongyloides. The differential diagnosis between the Old and New World forms is made by definite morphological characteristics, the latter having a bipartite dorsal ray and a dorsal conical tooth projecting into its buccal cavity. The eggs of ankylostoma lodge in the intestinal tract, and develop into adults only after escaping in the feces. The embryo has a characteristic bottle-shaped esophagus, and lives in water or moist earth. At the fifth day the worm undergoes a second ecdysis, then infects the human being, and, after a third ecdysis, grows into the adult worm, with an esophagus capable of sucking blood. Anemia is always present. Hemoglobin in the various series of reported cases has averaged about 10 to 20 per cent., red-blood cells about 2,000,000, and whites about 6,000. The anemia is not easy to explain. It is not always in proportion to the number of worms present, and is probably not due to the sucking of blood by the parasites. Boycott and Haldane say that it is due to hydremia, just like chlorosis. A toxin acting on blood or blood organs has also been suggested as the cause, and the pathological liver changes with the eosinophilia seem to support this view. The pathology of ankylostomiasis shows itself in fatty kidneys and liver, catarrhal stomach, hemorrhages of ileum and jejunum, reddened and enlarged Peyers patches and eosinophilic infiltrations in the intestines and the bone-marrow of pernicious anemia. Reddened areas appearing suddenly in the skin (the "bunches" of Cornwall miners) may be present, and may lead to the so-called "ground itch." The treatment consists of the administration of thymol in 20 to 30-grain dosage, followed by a purge, and repeated until the eggs appear in the stools. The prognosis is good in all but young and badly-nourished children.

Dr. N. R. Stokes showed several interesting pathological specimens. The first showed typical tuberculous areas in the epididymis. In this case incision had been made into an epididymitis and pus-containing tubercle bacilli, but no gonococci found. The second specimen was of a fracture of the first rib. The injury had resulted from the patient's being jammed between two freight cars, and had been associated with a fracture of the clavicle and laceration of the stomach. No other ribs were broken. The specimens of two cases of acute endocarditis were also shown, both affecting the aortic and mitral valves. The last specimen was a cirrhotic liver taken from a patient seen in May with a large, palpable liver and a history of nose-bleeds. A diagnosis of alcoholic cirrhosis was made. At autopsy the liver showed typical atrophic cirrhosis, and the granular kidneys of chronic interstitial nephritis. Several varices were found around the cardiac end of the stomach, which, when squeezed, showed several small punched-out ulcers. The stomach was full of blood, and death had evidently been due to leakage from the ulcers below the dilated esophageal veins.

Dr. Blake said, in reference to the second specimen shown, that fracture of the first rib was very rare except from bullet wounds or in extensive injuries, and he did not understand the mechanics of the occurrence of this fracture without other lesions.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD DECEMBER 21, 1903.

Dr. Boggs reported some experiments done on the coagulation of blood, and showed a new instrument for the estimation of coagulation time. In this apparatus a drop or so of blood is placed on the surface of a truncated glass cone. Over the blood a fine current of air is kept blowing, which causes it to rotate as a whole. At the moment of coagulation, however, the rotation of the blood-drop, which, during the process, has been watched through a microscope, ceases, owing to the formation of fibrin, and thus a sharp reaction is seen at the moment of coagulation. This instrument is based on the principle of the apparatus first proposed by Brodie and Russel, but it is much less complicated and gives relatively constant results. It is also inexpensive. Dr. Boggs' experiments, performed during the summer, were directed toward demonstrating the possibility of artificially changing the coagulation time in living animals. With injection of gelatine, the results were very inconstant, but most of the animals were entirely unaffected, even by tremendous doses. With calcium salts, however, a rapid decrease in the coagulation time occurred quite constantly, and a return to the normal after stoppage of the drug was also usually noted. Injections of gelatine and calcium salts were also tried on blood which had been made pathological by previous injury. The results for gelatine were in this case also negative. The patients studied clinically included cases of gall-bladder disease, scurvy and purpura, and the results were all good when calcium lactate was used. It is necessary in using the instrument shown to have the surface perfectly clean and to direct it at right angles to the drop when the blood is drawn. The coagulation time is uniformly longer with this instrument than with the Wrights tubes, averaging from four to five minutes. The administration of calcium in one case of jaundice reduced the coagulation time from thirteen to two and one-half minutes, and good results were also obtained in carcinoma of the bladder with hematuria.

Dr. R. C. Cabot, of Boston, read a paper on the limitations of urinary diagnosis. Accuracy must always be relative to one's purpose, and misdirected exactness is a danger of present-day students. The wise man knows where to concentrate his accuracy. A large part of the time spent on urinary analysis in relation to kidney conditions is wasted, for, as Councilman says, the urinary examination does not give any sure information as to the type of kidney lesion to be expected. Dr. Cabot reported two cases illustrative of this view. The first had before death ½ per cent. of albumen and very large amounts of casts in his urine. He died of spinal meningitis, and no lesion was found in either kidney. In the second case a post-operative, partial suppression of urine with edema were the clinical features, and the urine showed, beside a large albumen content, numerous casts, particularly of the waxy variety. At autopsy the kidneys were found absolutely normal. A review of all the cases of nephritis which have come to autopsy at the Massachusetts General Hospital since 1893 shows that nineteen have been of the acute glomerular type, five of which (all accompanied by edema) were recognized during life. Of the seventeen chronic parenchymatous cases, fifteen were recognized during life, but in these the clinical picture was quite characteristic without urinary examination. Of the thirty-seven chronic interstitial cases, fourteen were correctly diagnosed nephritis, but in only four was the type recognized. Concerning the diagnosis of nephritis, we may say, first, albumen without pus does not necessarily mean inflammation of the kidney; second, the presence of casts is not diagnostic, for they may be found in normal urine if it is thoroughly centrifugalized; third, the estimation of solids and urea in the urine without a complete knowledge of the patient's metabolism is misdirected energy; fourth, all the information to be obtained by thorough urine examination may be gotten by noting the color, the specific gravity and the amount of a 24-hour specimen.

Dr. Welch: The pathologists cannot, of course, construct a clinical history from seeing the kidneys any more than the clinician can prophesy the kidney lesion. The explanation of this lack of concordance is our ignorance of the condition in the kidney on which albumen and casts depend. Cohnheim made albuminous urine depend on changes in the glomerular epithelium, and these would be difficult to see microscopically. There is, however, no mystery about the facts which Dr. Cabot brings forth; it is simply that we cannot recognize the changes.

Dr. Emerson: The Hopkins Hospital reports of nephritis and albuminuria agree in the main with what Dr. Cabot has said. It is not true, however, that a knowledge of the percentage of albumen in urine without a knowledge of the total amount is of no value, for we have shown that a kidney excreting a small percentage of albumen is in better condition than one excreting a large percentage, even if the total amount of albumen in the former urine is larger than in the latter.

Dr. Thayer reported two cases of pericarditis with effusion. The first was a man, aged twenty-five years, who had a double pleurisy. A few weeks before he was seen by Dr. Thayer he had been attacked by dyspnea, pain over the heart and a sudden feeling of faintness. When seen his pulse was 150, and there were marked signs of effusion into the pericardium. A needle was inserted and 1,250 c. c. of straw-colored fluid withdrawn, the pulse falling to normal and the symptoms disappearing. Three weeks later the heart apex was in the fourth interspace, 10 cm. from the middle line, and the absolute dullness was normal. Patient later developed tuberculous laryngitis. The second case was a man, aged fifty-nine years, who was admitted to the Johns Hopkins Hospital in extremis. There was a large pericardial effusion, but no fluid could be obtained by tapping; 1,200 c. c. were removed at the autopsy table from the pericardial sac. There are three dangers in tapping the pericardium—puncture of the pleura, of the heart, or of the mammary vessels. These, however, amount to little, provided the tapping is carefully done. The question as to the best site for tapping has been much discussed. The places usually advised are, as a matter of fact, well fitted for reaching the heart, though usually chosen with the opposite end in view. Possibly the best plan is to tap at the point where the heart sounds cease to be heard, and so get below the effusion, from which point good drainage may be possible.

Dr. Cabot said that in his experience most pericardial taps were dry taps, and that the successful ones had been those done outside the nipple line.

Dr. McCrae said that he had had similar experience.

Dr. Cole suggested that these cases be treated surgically from the start, and that free incision be made, if necessary, so as to avoid danger of missing the fluid.

Dr. Bloodgood showed lantern slides of benign bone cysts, including the only case which has occurred in the Johns Hopkins Hospital.

MEETING HELD JANUARY 4, 1904.

Dr. G. T. Kemp of the University of Illinois read a paper on the effect of altitude on blood corpuscles and blood plates, in which the conclusions reached during a trip to Colorado for the study of the blood were reported. Observations on the blood of six healthy individuals were made at varying altitudes on the plains at Cripple Creek and on the summit of Pike's Peak. The well-established fact, known since the time of Behr and Biot, that rise in altitude causes an increase in the red-blood corpuscles, was illustrated in the counts made on this expedition, but at the summit of Pike's Peak, in addition to this text-book increase, a marked variation between the morning and afternoon count was noted. Early in the day the red-blood corpuscles were much higher than later, and in one case this difference, which was always over 500,000, amounted to 1,000,000. In a general way the hemoglobin curve followed that of the reds, but not exactly, and the variations of the hemoglobin were less marked than in the corpuscles. For this reason, when the corpuscles were markedly diminishing in number, each one was carrying a high per cent. of hemoglobin. The ratio of the blood plates to the reds (normally 1 to 15) was fairly high in Illinois. At Cripple Creek an enormous fall took place, signifying, of course, a marked increase in the number of plates. This fall, which continued during the stay in a high altitude, was more marked, more regular, and of longer duration than the changes in corpuscles or hemoglobin. This fact would seem to point to a new and safe and more constant indication as to the blood condition in the ratio of plates to corpuscles. The leucocytes were not affected by the altitude, and it looks as if the blood plates had some genetic relation with the reds, but not with the whites. In counting the plates an extremely small amount of blood must be drawn and a drop of methyl green (containing some formaldehyde for fixing purposes) placed over it. The count would be made with a one-twelfth oil lens.

In the early days the so-called lymph was obtained from spontaneous cowpox; next humanized virus was used, being passed from arm to arm (in one case for 44 years), but it was found that the lymph eventually died out, and so cowpox or accidental horsepox was used as its source. Later retro-vaccination was done, with the idea of increasing the virulency by changing the medium. In the next few years humanized serum was used, but the transference of syphilis told against this method. In the early days the lymph was dried between glass plates, on linen threads, glass stoppers, quills, lancets, and even thorns. Capillary tubes were also used early in the history of vaccination. The lymph has been applied in various ways—by actual incision, by hypodermic injection, and by forcing it under a blister artificially produced. The vaccine pulp contains, beside the liquid, leucocytes, fat, specific and accidental germs, but, in spite of the objections to it, it is always used in Germany, where vaccination is thorough and successfully done. In the preparation of vaccine, young calves, usually females, are used. After previous washing and inspection, linear scarifications are made (usually on the abdomen) with aseptic precautions. The seed virus, either of cow or human pox, is then smeared on. In a few days the vesicles form, the skin is again washed, and pulp is collected by scraping with a curette. The lymph was formerly mixed with various antiseptics, but now nothing but glycerine is used. In the United States there is absolutely no control over vaccine manufacture, and Rosenau showed that much of the lymph in circulation is badly contaminated.

MARYLAND MEDICAL JOURNAL.

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BALTIMORE, APRIL, 1904

LEGISLATION ON TUBERCULOSIS.

THE legislature of Maryland in the session just closed gave the people many disappointments and some surprises. The disastrous fire of February 7 profoundly affected the general subject of appropriations, but its influence went in some directions much farther than was expected. The fate of the Tuberculosis Commission and its measures furnished one of the surprises of the session. The bill to extend the life of the Commission passed the house with an amendment which nearly killed it, and in the senate it was treated with contumely, voted down, then revived, and at last became a law.

The progress of the three measures introduced by the Commission was almost as stormy. The one which proposed practical methods of controlling the spitting nuisance received very scant consideration. It was reported by the house committee unfavorably within 48 hours of its introduction. The unfavorable report was adopted, but the bill was revived, and returned to the committee to die there.

The other two were introduced in the senate, where they were treated at first with ridicule, and appeared to have no chance whatever of passage. The senator who introduced these bills, Mr. Brewington, had no little difficulty in securing a respectful consideration of their provisions. This much accomplished, the views of the senators were gradually altered until both bills were favorably reported by the standing committees. They passed the senate very late in the session, barely in time to permit their passing the house. The judgment of the house committee had, however, been favorably influenced in advance, so that the bills went forward without delay. The passage of these two bills without amendment was one of the surprises of the session.

The vicissitudes of the tuberculosis legislation were not due to the indifference of the legislature. The members were acutely sensitive to the proposition to register tuberculosis, and they shied at the provisions for domestic prophylaxis. These provisions were simple enough and quite free from any sort of official intrusiveness, but they were novel, and on that account alarming. The bills had been introduced late in the session, and the committees, being pretty well tired out with the rush of legislation, were inclined to be hasty in their judgment. With an early start at Annapolis and patient individual effort among the members, the progress of the bills would have been smoother, though they would probably have been amended. Their enactment without amendment perhaps signifies rather the confidence of the legislature in the men who proposed them than definite approval of the several provisions of the bills.

THE DOMESTIC PROPHYLAXIS OF CONSUMPTION.

We have printed elsewhere in this number the text of the new law to protect citizens of Maryland from certain communicable diseases, especially tuberculosis of the lungs and larynx. The first section of this law offers to persons who are subjected to offense or danger from indiscriminate spitting a means of correcting that abuse. Probably this means of defense against tuberculosis will not be extensively utilized in the near future. The responsibility of initiating proceedings against a dangerous spitter remains with any or all of those who are exposed to such a danger, and there must be very few persons in the State who are so impressed with the menace of tuberculous sputa as to lodge complaint against an inmate of the same house. Nevertheless this first section of the act will be a very useful thing for educational purposes and for disciplinary use in institutions, lodging-houses, schools, and other like places.

The other sections mark out a new and rational plan of procedure in the restriction of tuberculosis. The provisions when stripped of their legal verbiage are quite simple. They propose that physicians, whenever they recognize a case of pulmonary or laryngeal tuberculosis, shall give to the affected person and to the family one good demonstrative lesson on the prophylaxis of consumption, the necessary materials being supplied by the State. For this service the physician is to receive a fee. He is at liberty to decline the performance of this service, but in that event the duty devolves upon the local board of health.

A single lesson on the subject may not teach a consumptive to be habitually careful of his expectoration, and so may not suffice for the protection of the household, but nevertheless the method proposed by the Tuberculosis Commission has definite advantages over any administrative plan yet devised. The measure is a highly educational one, and its lesson is conveyed in every instance not to the patient alone, but to all who are under the same roof. It will produce some degree of vigilance and care in every infected household. It may fail to impress the consumptive or it may fail to impress his associates, but it can hardly fail on both hands. A lesson delivered under the provisions of this act will have all the advantages of time and place. The circumstances will be most favorable to a lasting impression.

It is said that there are about 10,000 consumptives in Maryland, and if so, one may wonder how so great a number of people can be reached with an appropriation of $5000. The answer appears to be that the appropriation is not expected to reach 10,000 consumptives, but a number equal to the annual crop of fresh infections, and including a great majority of those who are most in need of such aid. The benefits of the law will reach directly an increasing proportion of the consumptives, and its indirect benefits will be more and more apparent in popular enlightenment on the subject of tuberculosis.

If the Tuberculosis Commission is to be congratulated more upon one feature of its work than on any other, it is upon the fact that they have given a tremendous impetus to popular education without exciting any signs of phthisiophobia, and have brought about the enactment of laws which will add no burden to the unhappy lot of the consumptive.

REGISTRATION OF NURSES.

THE bill providing for registration of nurses encountered no material opposition at Annapolis, and promptly became a law. The movers of this legislation are to be congratulated not only upon their success, but upon the timeliness of their effort. If the need of such legislation had been very urgent, the opposition would have been just so much stronger. Our American methods of law-making usually permit abuses to become gross and powerful before undertaking their correction.

Other States have discovered that the training school for nurses may be about as nefarious as any other means of exploiting the public. The population of Maryland will probably yield as many and as inefficient nurses as any other equal population, and the substantial attractions of the training business are already beginning to be realized. The registration law will not of itself oppose any obstacle to the multiplication of training schools, but it will create a body of influential women whose certification will be somewhat more satisfactory than that of a good training school and who may make a firm stand against the further degradation of their honorable calling.

THE END OF THE NEW YORK STATE CANCER LABORATORY.

THE legislature of New York has not renewed the annual appropriation of $15,000 to the cancer laboratory at Buffalo. The finance committee said: "We are convinced that no progress is being made in the Buffalo laboratory. The State would gladly spend its money in the effort to find a cure for cancer if it could be shown that any advance had been made." This action marks the end of the first large experiment in medical research under the support of a State treasury, and the results, though regrettable, are not disappointing.

To have secured State aid for such an enterprise was a remarkable political performance. The search for a cancer cure was attractive enough to the politicians, and this is not surprising. But politicians expect marketable fruit to follow their planting without long delay, so that the laboratory started and continued its work under the unwholesome necessity of reporting substantial progress at short intervals. The reports of the laboratory looked like the children of that necessity. Their claim to scientific consideration was never strong, though their appeal to the State was effective for six years. If the cause of cancer could have been demonstrated, the assembly might have been enthusiastic enough to support the laboratory for some years longer. It is a pity that so much was not done, but it was not to be expected, for scientific research is not helped, but hindered, by accountability for a definite kind or amount of work in a given time.

SUMMARY OF RESULTS OF EXAMINATION HELD BY THE BOARD OF MEDICAL EXAMINERS OF MD., MAY 20, 21, 22, 1903.

No.	College of Graduation.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
1	University of Maryland	95	95	76	100	95	66	89	89	80	785	87
2	University of Maryland	70	95	50	85	86	55	82	82	72	682	75
3	University of Maryland	73	100	81	100	94	88	90	90	85	801	89
4	University of Maryland	75	80	75	85	78	77	83	83	82	718	79
5	College of Physicians and Surgeons	70	80	53	90	75	75	90	90	87	710	78
6	College of Physicians and Surgeons	78	90	63	95	90	85	93	93	95	782	86
7	University of Maryland	75	95	76	90	93	62	85	85	87	748	83
8	University of Maryland	70	90	73	75	78	63	93	93	94	729	81
9	University of Maryland	60	85	66	100	87	65	87	87	90	727	80
10	Maryland Medical College	75	80	64	90	72	58	80	..	92	611	77
11	University of Maryland	50	95	43	90	77	62	92	92	87	688	76
12	University of Maryland	85	85	53	90	76	85	87	..	75	636	79
13	University of Maryland	85	90	83	100	96	90	98	98	97	837	93
14	University of Maryland	90	90	84	100	89	82	78	78	77	768	85
*15	Baltimore University	10	60	1	..	74	30	..	..	70	..	..
16	University of Maryland	..	80	75	100	76	45	80	80	82	618	68
17	Maryland Medical College	70	80	50	85	83	69	42	42	87	608	65
18	College of Physicians and Surgeons	75	80	53	80	76	73	75	75	90	677	75
20	University of Maryland	85	90	75	100	88	84	90	90	84	786	87
21	Baltimore Medical College	84	80	61	85	85	67	90	90	94	736	81
22	University of Maryland	95	85	61	90	93	75	82	82	90	753	83
23	College of Physicians and Surgeons	84	80	66	85	84	73	87	87	90	736	81
24	University of Maryland	100	80	75	95	89	92	90	90	90	801	89
25	University of Maryland	72	70	63	80	88	60	75	75	60	643	71
†26	Baltimore Medical College	70	..	..	..	..	46	28	28	94	..	..
†27	Baltimore Medical College	75	..	..	..	..	80	76	..	84	..	..
28	University of Maryland	65	80	38	75	90	88	83	83	82	684	76
29	Baltimore Medical College	90	85	79	90	90	73	93	93	94	787	87
†30	Baltimore Medical College	70	..	..	..	..	75	76	..	92	..	..
†31	Baltimore Medical College	60	..	..	..	..	60	78	..	80	..	..
32	Baltimore Medical College	78	75	25	80	61	35	83	83	85	605	67
33	Baltimore Medical College	84	85	65	80	80	83	72	72	99	720	80
34	College of Physicians and Surgeons	70	75	55	90	75	52	55	55	87	614	68
†35	University of Maryland	95	..	..	..	..	86	98	..	94	..	..
36	University of Maryland	75	85	61	90	83	75	74	74	83	700	77
37	University of Maryland	75	80	55	80	85	86	22	22	87	592	66
*38	Baltimore University	70	60	63	60	78	76	82	..	82	..	..
39	College of Physicians and Surgeons	75	90	60	80	77	75	70	70	80	677	75
40	Baltimore Medical College	95	75	46	100	73	90	82	82	89	732	81
41	University of Maryland	80	90	62	90	75	87	82	82	82	730	81
†42	College of Physicians and Surgeons	78	..	..	..	..	63	84	..	79	..	..
43	University of Maryand	70	80	75	80	84	87	85	85	88	734	81
*44	Maryland Medical College	60	40	30	75	79	60	82	82	82	..	..
†45	University of Maryland	75	..	..	..	..	78	90	..	85	..	..
†46	University of Maryland	100	..	..	..	..	85	84	..	89	..	..
47	University of Maryland	90	90	55	85	83	85	80	80	92	740	82
48	University of Maryland	70	75	66	90	86	90	89	89	80	735	81
49	University of Maryland	65	80	80	85	89	93	93	93	65	743	82
50	University of Maryland	84	80	82	90	87	85	87	87	69	751	83
51	University of Maryland	75	80	68	85	81	75	80	80	82	706	78
†52	University of Maryland	79	..	..	..	..	75	86	..	90	..	..
53	University of Maryland	90	85	75	100	90	79	75	75	88	757	84
54	Johns Hopkins Medical Department	75	90	80	85	93	92	90	90	87	782	86
55	Johns Hopkins Medical Department	85	85	90	90	91	86	72	72	97	768	85
†56	Baltimore Medical College	84	..	..	..	..	75	68	..	92	..	..
†57	Baltimore Medical College	90	..	..	..	..	76	80	..	88	..	..
58	Maryland Medical College	20	60	13	75	52	0	85	85	52	442	49
59	Maryland Medical College	40	70	40	90	54	40	35	35	68	472	52
60	Baltimore Medical College	100	90	73	100	90	90	87	87	100	817	90
61	University of Maryland	50	75	56	95	81	86	82	82	84	691	76
†62	University of Maryland	85	..	..	..	..	73	72	..	65	..	..
*63	University of Pennsylvania	75	85	55	80	61	20	77	77	90	..	..
64	College of Physicians and Surgeons	100	95	61	90	94	85	82	68	89	764	84
65	College of Physicians and Surgeons	78	90	55	85	92	76	84	..	97	657	82
†66	University of Maryland	95	..	..	..	..	73	78	..	89	..	..
†67	University of Maryland	80	70	39	85	78	60	75	75	85	647	71
69	University of Maryland	95	..	..	..	..	55	76	..	90	..	..
†70	....	..	..	15	..	..	..	..	..	..	..	..
71	University of Maryland	75	..	..	..	..	46	76	..	75	..	..
72	University of Maryland	70	..	..	..	..	26	38	..	72	..	..
73	Baltimore Medical College	78	90	46	90	81	73	85	85	99	727	80
74	Baltimore Medical College	80	80	71	100	82	75	92	92	85	757	84
75	University of Maryland	84	80	70	95	87	86	90	90	82	764	84

SUMMARY OF RESULTS OF EXAMINATION HELD BY THE BOARD OF MEDICAL EXAMINERS OF MARYLAND MAY 20, 21, 22, 1903.—CONTINUED.

No.	College of Graduation.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
*76	Baltimore Medical College	..	..	26	..	..	51	..	..	..	..	..
78	Baltimore Medical College	79	80	39	85	75	63	82	82	90	675	75
79	Baltimore Medical College	95	80	71	90	89	72	78	78	95	748	83
80	University of Maryland	100	85	80	95	95	79	87	87	84	792	88
81	Johns Hopkins Medical Department	90	85	95	90	90	87	90	90	95	812	90
82	Johns Hopkins Medical Department	90	80	90	90	93	83	72	72	94	764	84
‡83	Johns Hopkins Medical Department	94	80	86	85	84	82	82	82	94	769	85
84	Baltimore Medical College	100	95	75	100	94	89	95	..	94	742	92
85	Baltimore Medical College	88	80	86	95	79	84	85	85	90	772	85
86	College of Physicians and Surgeons	95	95	93	90	94	75	92	92	92	818	90
87	Baltimore Medical College	78	80	60	90	85	73	70	70	82	688	76
88	Baltimore Medical College	95	85	61	90	84	80	90	..	90	675	84
89	Baltimore Medical College	30	75	40	50	72	63	63	63	75	531	59
90	Baltimore Medical College	100	90	84	100	92	75	89	..	94	724	90
91	Baltimore Medical College	90	95	70	100	90	82	92	92	95	806	89
†92	University of Maryland	90	..	..	..	..	67	78	..	95	..	..
†93	University of Maryland	90	..	..	..	..	67	88	..	89	..	..
†94	University of Maryland	70	..	..	..	..	52	62	..	85	..	..
95	Baltimore University	30	75	8	75	28	5	75	75	59	430	47
96	Baltimore University	0	75	8	80	47	7	70	70	..	357	39
97	Baltimore Medical College	10	75	40	80	70	56	77	77	69	554	61
†98	University of Maryland	75	..	..	..	..	51	84	..	70	..	..
99	University of Maryland	70	85	59	95	88	60	90	90	75	712	78
100	Baltimore Medical College	70	80	67	85	74	59	82	82	97	696	77
101	Baltimore Medical College	65	90	60	95	88	63	90	90	93	734	81
102	University of Maryland	75	85	86	90	94	79	67	67	90	733	81
103	Maryland Medical College	45	75	23	50	61	29	67	67	69	486	54
105	Johns Hopkins Medical Department	75	95	81	90	82	87	88	88	92	778	86
106	Baltimore Medical College	75	85	78	90	86	76	85	85	97	757	84
107	Johns Hopkins Medical Department	76	85	80	85	88	69	80	80	92	735	81
108	Johns Hopkins Medical Department	78	85	84	80	86	88	70	70	87	728	80
†109	Johns Hopkins Medical Department	70	..	..	..	..	80	60	..	90	..	..
*110	University of Maryland	75	75	55	84	84	65	84	85	85	..	..
111	Maryland Medical College	65	80	36	80	70	60	78	78	67	614	68
*112	Maryland Medical College	90	75	63	80	87	75	75	75	80	..	..
†113	University of Maryland	84	..	..	..	..	76	76	..	79	..	..
†114	University of Maryland	80	..	..	..	..	73	80	..	80	..	..
†115	University of Maryland	75	..	..	..	..	80	76	..	92	..	..
*116	University of Maryland	..	..	5	..	..	79	77	77	..	..	..
117	Baltimore Medical College	50	50	73	70	96	69	80	80	74	642	71
118	Baltimore Medical College	45	75	44	85	80	77	90	90	89	675	75
119	Maryland Medical College	78	80	63	90	88	66	78	78	92	713	79
*120	Baltimore University	0	25	35	90	68	26	80	..	92	..	..
121	University of Maryland	70	80	70	70	79	72	68	68	82	659	73
122		..	..	10	..	..	..	..	..	..	..	..
*123	Baltimore Medical College	75	80	46	84	80	61	87	..	82	..	..
124	University of Maryland	84	85	59	100	93	94	73	73	87	748	83
125	Baltimore Medical College	75	95	63	95	83	75	57	57	87	677	75
*126	Baltimore University	70	..	35	..	..	15	..	..	..	..	..
*127	Maryland Medical College	60	50	44	75	77	7	..	..	75	..	..
128	College of Physicians and Surgeons	45	..	53	90	84	49	67	67	75	530	58
129	College of Physicians and Surgeons	70	70	59	90	82	65	82	82	75	675	75
130	College of Physicians and Surgeons	75	90	63	100	91	56	47	47	93	662	74
131	University of Maryland	75	85	71	95	60	66	87	87	85	711	79
132	University of Maryland	80	90	71	100	81	90	95	95	87	789	87
134	Johns Hopkins Medical Department	84	75	51	85	83	92	53	53	82	658	73
135	Johns Hopkins Medical Department	84	95	90	100	98	83	87	87	94	818	90
*136	University of Maryland	10	40	51	75	78	71	82	87	..	..	..
137	Jefferson Medical College	..	60	0	40	23	..	1	1	1	186	20
138		..	75	..	..	..	..	..	..	..	..	..
†140	University of Maryland	70	..	..	..	..	58	86	..	80	..	..
†142	Maryland Medical College	70	..	..	..	..	55	84	..	85	..	..
150		..	..	..	60	73	38	72	72	60	..	..

Of the 136 applicants in the above list there are 93 who participated in the examination for the first time, of whom 72 were successful. One, however, not having received diploma at the commencement exercises occurring subsequent to the examination, failed to receive a license. Twenty-one failed. There were 13 applying for re-examination, none of whom succeeded in *all* the branches in which they had previously failed. There were 26 taking the examination at the completion of their second year of study in anatomy, chemistry, materia medica, and physiology. Of this number 18 failed in one or more branches. Owing to withdrawal from the examination or failure to hand in the identification card, four cannot be classified.

*Re-examined. †Second-year student. ‡Failed to receive diploma.

SUMMARY OF RESULTS OF EXAMINATION HELD BY THE BOARD OF MEDICAL EXAMINERS OF MD., NOV. 11, 12, 13, 14, 1904.

No.	College of Graduation.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
*1	Baltimore Medical College	..	..	75	..	81	75	..	..	..	..	..
2	University of Maryland	75	25	53	75	74	43	68	83	60	556	61
3	Howard Medical College	84	85	70	90	85	85	89	84	100	772	86
*5	College of Physicians and Surgeons	70	..	70	..	..	68	85	77	..	..	..
6	University of Maryland	95	90	75	90	93	70	63	86	84	756	85
7	Howard Medical College	85	90	60	100	81	65	88	79	90	738	82
*8	Maryland Medical College	..	..	75	..	..	..	..	..	..	..	..
9	University of the South	40	75	28	100	83	21	93	92	71	603	67
10	Columbian University	80	90	86	90	82	86	86	89	90	779	86
11	Maryland Medical College	50	90	21	80	79	20	93	76	75	584	64
12	University of Maryland	75	95	73	90	77	11	82	67	80	650	72
13	Maryland Medical College	100	90	48	80	84	38	87	80	69	676	75
14	Maryland Medical College	40	90	53	90	83	46	96	80	75	653	72
15	Maryland Medical College	50	60	25	85	77	23	85	76	35	516	57
16	Maryland Medical College	60	80	66	90	83	53	92	85	75	684	76
17	Maryland Medical College	70	75	46	90	70	30	83	87	80	631	70
*19	Baltimore Medical College	..	..	75	..	..	75	..	..	..	..	..
*20	University of Maryland	75	80	75	..	..	75	..	..	..	..	..
*21	Johns Hopkins Medical Department	70	95	66	90	82	40	78	85	88	694	76
*22	Baltimore University	..	80	45	..	79	20	..	..	..	..	..
*23	Maryland Medical College	50	85	75	..	..	0	..	..	..	..	..
*24	Leonard Medical College	80	..	75	85	79	75	..	..	..	..	..
*25	Johns Hopkins Medical Department	..	..	75	..	..	..	92	89	..	..	..
26	University of Toronto	75	95	95	100	92	76	91	88	100	832	92
*27	University of Maryland	100	95	75	..	..	..	..	..	..	..	..
*28	Baltimore Medical College	70	..	63	..	75	48	..	..	87	..	..
*29	Baltimore Medical College	75	80	75	90	..	75	..	..	75	..	..
30	Baltimore Medical College	60	100	55	85	80	37	95	87	76	675	77
*31	Baltimore University	25	95	20	85	66	23	..	54	38	..	..
*32	Maryland Medical College	..	..	75	..	..	75	..	..	..	..	..
33	Baltimore University	60	85	51	85	73	25	86	39	67	571	63
34	Maryland Medical College	70	85	78	100	72	68	75	75	70	693	77
35	Baltimore University	20	85	11	90	52	0	52	30	8	384	42
*36	University of Maryland	..	..	78	..	..	75	..	..	75	..	..
*37	College of Physicians and Surgeons	65	95	66	..	..	31	66	54	..	..	..
38	Baltimore University	75	80	43	90	70	30	59	60	64	571	63
*39	College of Physicians and Surgeons	..	..	75	..	..	75	89	84	..	..	..
40	University of Maryland	95	80	76	100	87	75	95	93	96	797	88
41	University of Pennsylvania	75	80	90	90	90	75	83	81	78	742	82
42	College of Physicians and Surgeons	70	85	65	90	90	45	90	91	73	690	77
†43	Baltimore Medical College	50	80	..	..	81	..	78	77	58	..	..
44	Jefferson Medical College	95	100	66	90	92	65	94	97	83	782	86
*45	Maryland Medical College	40	80	28	..	61	48	..	..	50	..	..
46	Jefferson Medical College	75	90	71	90	83	23	94	86	75	687	76
47	University of Virginia	85	95	88	90	92	71	75	80	96	772	85
48	Ohio Medical University	60	90	55	80	78	33	97	88	69	650	72
*49	University of Maryland	75	80	75	..	..	75	..	..	88	..	..
*50	Maryland Medical College	70	90	38	..	..	30	..	..	..	..	..
*51	University of Maryland	..	..	78	..	76	86	..	..	..	..	..
*52	University of Maryland	..	..	75	..	..	..	..	..	..	..	..

Of the 50 applicants taking the examination, 28 were before the Board for the first time. Of this number 16 attained the required average of 75 and were licensed, 11 failed, and one was represented in the examination by a substitute, upon detection of which papers were cancelled. The list shows 22 appearing for re-examination under the law of 1902, granting re-examination in branches in which they had previously failed. Of this number eight again failed in one or more branches.

*Re-examined. †Was personated, substitute was detected, and papers cancelled.

REPORT OF MEDICAL EXAMINERS.

QUESTIONS AT THE MAY (1903) EXAMINATIONS.

ANATOMY.

1. Describe the diaphragm, its openings and nerve supply.

2. To what class do the sacro-iliac articulations belong? Describe these articulations.

3. Describe the origin of and arterial circulation of the hand.

4. Give names and boundaries of each lobe of the cerebrum.

5. Describe origin, course, and functions of the seventh or facial pair of cranial nerves.

6. Describe the difference between the femur of a child three years of age and that of an adult.

SURGERY.

1. Define lipomata, fibromata, chondromata, osteomata, myomata, papillomata.

2. Describe the various dislocations of the elbow and the treatment.

3. Describe and treat a case of Pott's fracture.

4. Describe the methods of amputation of the shoulder-joint.

5. Describe the operation of ligation of the external iliac artery.

6. What are the symptoms and what the treatment of stone in kidney and ureter?

7. In case of threatened death during general anæsthesia, what measures should be adopted?

PATHOLOGY.

1. Granted that the cardinal signs of inflammation are pain, redness, heat, swelling and impairment of function. Confine yourself to a detailed description of the cause of the swelling.

2. Give definitions of the following terms: Atrophy, hypertrophy, degeneration, proliferation.

3. Give a detailed histological description of a typical section from hypertrophic cirrhosis of the liver.

4. What conditions outside of the heart itself give rise to hypertrophy of that organ, and in what manner do these conditions bring about the hypertrophy?

5. Describe in minute detail, giving reasons for each step in the process, the proposition for microscopic examination of a specimen of sputum supposed to contain tubercle bacilli.

6. (a) Give the morphological characteristics of two of the following micro-organisms: Diplococcus lanceolatus, bacillus anthracis, staphylococcus aureus, comma bacillus of Koch. (b) Mention the diseases in the human caused by the organisms you have described, and the channels through which infections with the said organisms most commonly occur.

OBSTETRICS.

1. Give the diagnosis and management of a post-occipital presentation.

2. The management of a case of abortion between the third and fourth month.

3. Nausea, cystitis and constipation being frequently abnormal conditions of pregnancy, what methods would you adopt for their relief?

4. Give differential diagnosis between prolapse of the endometrium and carcinoma of the cervix and describe treatment for the former.

5. Describe the dangers of a gonococcus invasion during pregnancy and the best method of treatment.

6. Describe the anatomical changes that lead to a prolapsed condition of the uterus and the best method of repairing the same.

PRACTICE.

1. Define empyema, varicella, chorea, herpes zoster, epidemic parotitis.

2. Name varieties of chronic nephritis. Give symptoms and treatment of one variety.

3. Give differential diagnosis between rotheln, measles and scarlet fever.

4. Give causes, symptoms and treatment of simple acute neuritis.

5. Give differential diagnosis between lobar pneumonia and acute catarrhal bronchitis.

6. Give symptoms, synonym and treatment of laryngeal diphtheria.

MEDICAL CHEMISTRY.

1. Under what circumstances are the syllables mono, di, tri, tetra and penta used in chemical nomenclature? Give examples.

2. How does chlorine act chemically upon metals, hydrogen, phosphorus, water, ammonia, hydrocarbons and coloring matter?

3. What is "blue vitriol?" How it is made? What are its properties?

4. What is glycerine? What is its source in nature? How is it obtained, and what are its properties?

5. Give the average composition of gravity cream, of skimmed milk, and of whey.

6. Describe in detail a process by which urea may be estimated quantitatively in urine. What amount of urea should be eliminated by healthy subjects in 24 hours?

7. What are albumoses? When found in urine, how are they differentiated from albumen?

8. Describe in detail the preparation of a sample of urine for examination for casts.

MATERIA MEDICA.

1. Describe hyoscyamus. Give its preparations, doses and physiological action.

2. What is jaborandi? Name its alkaloid, preparations, doses and physiological action.

3. What is aconite? Give its preparations, doses and physiological action.

4. Name two galactagogues, two cholagogues and two emmenagogues, and give their doses.

THERAPEUTICS.

1. Describe the symptoms and treatment of acute arsenical poisoning.

2. What are cathartics? Name the different groups. Name two of each group. Under what conditions would one group be used in preference to the others?

3. What are the therapeutic uses of digitalis?

PHYSIOLOGY.

1. State (a) color of the blood, (b) average specific gravity, (c) chemical reaction, (d) how does venous blood differ from arterial?
2. What are the physiological functions of the coats of the arteries?
3. What is chyme? How does it differ from chyle? What changes does chyme undergo in the intestines, and what secretions effect the change?
4. Locate the fissure of Rolando and name the centers in Rolandic area.
5. What is the normal amount of urine excreted daily, specific gravity and reaction? Compare secretion and filtration and tell what ingredients of the urine are secreted and what filtrated.
6. Give a chemical classification of foodstuffs, with an example of each.

QUESTIONS AT THE NOVEMBER (1903) EXAMINATIONS.

ANATOMY.

1. Describe the inferior maxillary bone.
2. Describe the hip-joint.
3. Where does the thoracic aorta commence and where does it terminate? Name its branches.
4. Describe Poupart's ligament, giving its anatomical relation and its uses as a surgical guide.
5. Describe the heart, including its minute anatomy.
6. Describe the origin and distribution of the sciatic nerve.

SURGERY.

1. Name and describe the different kinds of suture in general use among surgeons.
2. When should chloroform be used instead of ether? When ether instead of chloroform?
3. Tubercular arthritis of the knee—(a) diagnosis, (b) treatment in detail.
4. The radial artery is severed one inch above the wrist. Describe treatment in detail.
5. What do you understand by intubation, and under what circumstances is it of use?
6. Describe the application of the plaster-of-paris jacket.

PATHOLOGY.

1. Define anæmia, leucocytosis abscess, fibroma and metastasis.
2. Give a description of the microscopic appearances of a properly prepared and stained specimen of gonorrhœal discharge.
3. Give a detailed description of a method of isolating a bacterium in pure culture from a mixed growth.
4. Give the different methods of extension of inflammation.
5. To what do you ascribe the increased arterial tension so frequently seen in chronic interstitial nephritis?
6. An individual with a mitral stenosis of long standing and moderate degree meets with a sudden violent death. Give a gross description of his heart.
7. Give a detailed histological description of the lung in acute lobar pneumonia during the stage of red hepatization.
8. What histological characteristics determine the carcinomatous nature of a new growth?

OBSTETRICS.

1. Differential diagnosis and treatment of salpingitis.
2. Diagnosis of extra-uterine pregnancy.
3. Methods of resuscitating the apparently stillborn child.
4. Treatment of hemorrhage of the cord.
5. Management of breech presentation.
6. Management of shoulder presentation—the occiput lying anteriorly to the left.

PRACTICE.

1. Define emphysema, locomotor ataxia, tinea circinata, hydro-nephrosis, pertussis.
2. Name conditions with which uræmia may be confounded. Give differential diagnosis, and treatment of uræmia.
3. Name the various types of chronic valvular heart disease.
4. Describe symptoms of intestinal obstruction, and name three causes.
5. Typhoid fever. Diagnosis and treatment.
6. Acute arsenical poisoning. Diagnosis, symptoms and treatment.

CHEMISTRY.

1. Give definitions of the following terms: Atomic weight, specific gravity, quantivalence, allotropic and isometric.
2. Write the equation expressing the chemical reaction which ensues when iron sulphide and sulphuric acid are brought together under proper conditions.
3. In a purely chemical examination of water what findings are generally accepted as evidence of its unfitness for drinking purposes, and why?
4. Describe in detail Marsh's test for the detection of arsenic, and the precautions necessary to preclude error.
5. Describe two methods for detection of sugar in urine, with precautions necessary to preclude error.
6. Describe a method of determining the presence of free hydrochloric acid in a specimen of gastric contents.
7. To what substances do the various effervescing preparations used in medicine owe this property? Explain what occurs.
8. Describe a chemical method of identification of blood stains on wool, cotton, or other fabrics.

MATERIA MEDICA.

1. Give the source of atropine, caffeine and hyoscine, with the dose of each.
2. Describe iodide of potassium, giving the dose and methods of administration.
3. Describe chloral hydrate, and give the doses in which it may be given.
4. What are antipyretics? Name three.
5. Name and describe two good remedies for chronic constipation, and state the preparation and dose of each.
6. Name three drugs that may be used to produce mydriasis.

THERAPEUTICS.

1. Define local and general anæsthesia. Name means and methods of producing, and sources of danger.
2. Belladonna—its active principle, dose and physiological action.
3. Digitalis—its active principle, dose and physiological action.
4. Jaborandi—its active principle, dose and physiological action.
5. Symptoms and treatment of opium poison.
6. Ipecacuanha—its therapy.

PHYSIOLOGY.

1. What is metabolism? What is the effect of muscular work on metabolism?
2. Give the function of the blood, and tell how it performs this function.
3. What is the gastric juice, and what are the factors determining its secretion?
4. Where and how are fats digested and absorbed?
5. Describe the physiology of respiration.
6. What is reflex action? Give examples.

Medical Items.

AMONG the "freak" bills passed by the recent legislature, one authorized institutional physicians to issue burial permits upon their own death certificates. Physicians who reflect for a moment upon the subject will see that such powers offer a very convenient means of getting honorable practitioners into and the other sort out of difficulties. The physicians who do not want any such power as this bill offers are a very large majority, and the very few who would like it dare not say so. The text of the bill is as follows:

"SECTION 1. Be it enacted by the General Assembly of Maryland, That the local Boards of Health and the County Commissioners of the several counties where they exercise such powers, shall, on the first of April in the year 1904, and on the first of January in each year thereafter, designate and appoint as sub-registers to issue burial permits the physician or physicians residing in, attending on, or appointed to any college, academy, boarding school, hospital, retreat, asylum, sanitarium, or other like place in their respective counties.

"SEC. 2. And be it further enacted, That such sub-registers shall be entitled to receive and charge the sum of fifty cents for each and every permit so issued.

"SEC. 3. Be it further enacted, That said sub-registers shall report to the local Boards of Health or to the County Commissioners full and complete lists of all information contained in such permits."

ANOTHER bill which has been offered at previous sessions, and which may pass in the course of time, is not a "freak" measure, but a good effort of a bad sort. Its intent will hardly be misunderstood by any physician. If it became a law and should be effective, the consequences would delight all the ministers of death. It is as follows:

"An Act to prevent compulsory propagation and dissemination of disease.

"SECTION 1. Be it enacted by the General Assembly of Maryland, That henceforth no healthy, undiseased person shall be compulsorily inoculated, infected or contaminated with any disease whatsoever, and that any person who shall threaten, force or compel submission to such inoculation, contagion or infection shall for every such offense pay a fine of not less than fifty nor more than one thousand dollars, or be imprisoned at hard labor not less than thirty days nor more than three years, or both.

"SEC. 2. And be it further enacted, That all Acts or parts of Acts conflicting herewith are hereby repealed."

THE law for registration of tuberculosis adds new sections to an existing law, and reads as follows:

"SECTION 34G. Be it enacted by the General Assembly of Maryland, That from and after the passage of this Act the State Board of Health of Maryland shall keep a register of all persons in this State who are known to be affected with tuberculosis.

"The State Board of Health shall have sole and exclusive control of said register, and shall not permit inspection thereof nor disclose any of its personal particulars except to officials authorized under the laws of Maryland to receive such information.

"SECTION 34H. The superintendent or other person in charge or control of any hospital, dispensary, school, reformatory or other institution deriving the whole or any part of its support from the public funds of the State of Maryland or of any city, town or county in the State of Maryland, having in charge or under care or custody any person or persons suffering with pulmonary or laryngeal tuberculosis, shall within 48 hours after the recognition of such disease make or cause to be made, in the manner and form prescribed by the State Board of Health, a record of the name, age, sex, color, occupation, social condition and relations of the person or persons so affected, together with such other information as may seem necessary or important.

"And all such records shall be delivered under seal to the State Board of Health on Monday of the week immediately following that in which the records were made.

"Any superintendent or other person charged with a duty under this section who shall fail or refuse to comply with the requirements of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not more than twenty-five dollars.

"Section 34I. Whenever any physician knows that any person under his professional care is affected with pulmonary or laryngeal tuberculosis, he shall transmit to the secretary of the State Board of Health within seven days, and upon blanks provided by the State Board of Health for that purpose, the name, age, sex, color, occupation, social condition and residence of such person. And any physician failing or refusing to comply with the requirements of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be subject to a fine of ten dollars.

"Section 34J. The apartments occupied by any consumptive shall be deemed infected, and when vacated by the death or removal of said consumptive occupant, shall be disinfected by the Board of Health of the city, town or county in which such apartments are situated.

"And it shall be the duty of the householder, physician or other person having knowledge of the facts to notify the local Board of Health within 48 hours after the death or removal of a person affected with pulmonary or laryngeal tuberculosis. And any person failing to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and on conviction thereof shall be subject to a fine of ten dollars.

"Section 34K. Any person who lets for hire, or causes or permits anyone to occupy apartments previously occupied by a consumptive, before such apartments shall have been disinfected by a Board of Health, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined twenty-five dollars."

The bill extending the life of the Tuberculosis Commission is as follows:

"Section 1. Be it enacted by the General Assembly of Maryland, That the governor of the State be and is hereby authorized to appoint five persons, three of whom shall be physicians, who, by virtue of such appointment, shall constitute a commission to be known as the Tuberculosis Commission, whose duty it shall be to investigate the prevalence, distribution and causes of human tuberculosis in the State of Maryland, to determine its relations to the public health and welfare, and to devise ways and means for restricting and controlling said disease, and to investigate and report upon the proper construction, cost, equipment, maintenance and location of a sanatorium for the treatment of tuberculosis.

"Sec. 2. And be it further enacted, That the members of said commission shall serve without pay, except expenses actually incurred, and shall continue in office for a term of two years from the date of their appointment. They shall meet in the city of Baltimore within 30 days after the date of their appointment, and thereafter as frequently as may be necessary; they shall fill, by a majority vote, any vacancy that may occur in their membership, and shall report the results of their investigations not later than January, 1906.

"Sec. 3. Be it further enacted, That all hospitals, dispensaries and other institutions having medical officers and supported in whole or in part by public funds of the State of Maryland, or of any city or county in this State, shall cause to be made upon blanks furnished by the Tuberculosis Commission records of such facts as may be available for the use and purposes of said commission concerning every case of tuberculosis coming under the care of such institution, and shall return such records at such times and in such manner as shall be directed by the Tuberculosis Commission.

"Sec. 4. Be it further enacted, That for the purpose of defraying necessary expenses, including printing, rent, postage and clerical assistance, the sum of $2000, or so much thereof as may be necessary, is hereby appropriated, to be paid by the treasurer of the State upon warrant of the comptroller, at such times and in such sums as may be authorized by the commission."

Nearly a million and a half dollars, acording to *Charities*, is now being spent, or is about to be spent, in some nine different States for new buildings for the insane. This is exclusive of New York State, where between $600,000 and $900,000 is annually expended for this purpose. It would seem pertinent to inquire whether there might not be an increase in efficiency and decrease in cost if the experience of the different States were in some way made available to one another. We have practically the same classes of patients to be provided for in all cases, and there is little reason why buildings which have been found suitable in Massachusetts should not be suitable in Oregon. The building operations now under way, or already planned, include entirely new institutions at Norwich, Conn.; Allentown, Pa., and Parsons, Kan., and additions to existing buildings at Morristown and Harrisburg, Pa.; Spring Grove and Sykesburg, Md.; Dunning and Watertown, Ill.; Lyons View, Tenn.; Hopkinsville, Ky.; San Jose, Cal.; Eloise, Mich.; Las Vegas, N. M.; Norfolk, Neb., and Pineville, La. The buildings include administration buildings, nurses' homes, cottages for convalescents and buildings for almost all other classes of patients. These buildings are probably designed in most cases by architects who have little familiarity with the requirements of the insane or with expert opinion on the subject of their accommodation. It is not customary for architects to specialize on institution construction, and the appointment of an official State architect has probably never been considered in most cases. Problems which have been solved only after many failures in some of the older States are, perhaps, worked out afresh without adequate data. In 1891 William P. Letchworth, a member of the New York State Board of Charities, wrote a valuable paper on "Poorhouse Construction," which was transmitted by the State Board of Charities to the legislature and was afterwards reprinted and circulated for the information of the public. How helpful it would be if some expert in hospital construction would prepare a treatise on the construction of institutions for the insane, illustrated with plans and elevations and equipped with references to localities where successful exponents of sound theories of construction could be seen and studied.

DR. T. A. ASHBY'S new book on Gynecology was destroyed in the fire of February 7. A review of this work was lost in type by the MARYLAND MEDICAL JOURNAL.

CHICAGO has six cases of smallpox in the house of a Dowieite. These children of Zion refused vaccination.

DR. A. B. ARNOLD, emeritus professor of nervous diseases in the College of Physicians and Surgeons, Baltimore, died at the home of his son in San Francisco on March 28 at the age of 84.

FOR the purpose of discussing the question relating to organizations for the study of tuberculosis in this country 68 physicians met at the College of Physicians, Philadelphia, on the afternoon of March 28. Prof. William Osler of Baltimore presided, and Dr. Henry Barton Jacobs acted as secretary. After a full discussion, participated in by Dr. Daniel Lewis, Dr. Minor, Dr. Flick, Dr. Knopf, Dr. Solomon Solis Cohen, Dr. James Tyson, Dr. Stubbert, Dr. Pryor, Dr. Holton, Dr. Biggs, Dr. Rothrock, Dr. Jacobi, Dr. Janeway, Dr. Hare, Dr. Sternberg, Dr. Welch, Dr. Forchheimer, Dr. Ravenel, Dr. Rochester and Dr. Ward, Dr. Lawrence F. Flick of Philadelphia offered the following resolution, which was seconded by Dr. Forchheimer, and carried unanimously:

"*Resolved,* That we here assembled do now organize ourselves into a United States society for the study of tuberculosis."

It was then moved by Dr. George M. Sternberg of Washington, and seconded by Dr. Hare of Philadelphia, that the Chair appoint a committee of five to prepare a constitution and by-laws for such a society. This motion was carried unanimously. The Chair appointed Dr. Edward L. Trudeau, Dr. Herman M. Biggs, Dr. Lawrence F. Flick, Dr. William H. Welch, and Dr. George M. Sternberg as that committee.

It was further moved by Dr. Sternberg, and carried unanimously, that the chairman and secretary of this meeting be ex-officio chairman and secretary of the committee. Dr. Ravenel then moved, and it was unanimously carried, that it is the sense of this meeting that the committee call us together for organization at Atlantic City during the week of the meeting of the American Medical Association.

THE Herter lectures for 1904 are to be given in Johns Hopkins University by Prof. Paul Ehrlich of the Royal Institute of Experimental Therapeutics of Frankfort-on-the-Main. The subjects of the three lectures are as follows: April 12, "The Medical Relations Between Toxin and Antitoxin;" April 13, "Physical Chemistry vs. Biology and the Doctrines of Immunity;" April 14, "Cytotoxins and Cytotoxic Immunity."

DR. FREDERICK PETERSON has resigned as a member of the New York State Commission in Lunacy. The very bad policy of Governor Odell's administration is said to be the cause of the resignation.

MARYLAND
MEDICAL JOURNAL
A Journal of Medicine and Surgery

Vol. XLVII No. 5 BALTIMORE, MAY, 1904 Whole No. 1032

THE INCREASING MORTALITY FROM PNEUMONIA IN BALTIMORE, AND ITS CAUSES.

J. Hall Pleasants, M.D.,
Baltimore.

WERE the question less important I should feel it necessary to apologize for bringing forward a subject which is so largely one of figures, but as guardians of the public health it is our duty to appreciate fully the problem which now confronts us in the steadily-increasing mortality from pneumonia. A malady which in one year—1900—carried off in the United States 105,971 of the population demands our attention.

The press of the large cities has recently been filled with rather sensational statements about a widespread pneumonia epidemic, and the public is led to believe that we are now passing through an unusually destructive outbreak of the disease. Were this the whole truth we would have sufficient cause for uneasiness, but the actual facts are even more alarming. The high death-rate from pneumonia this winter is not merely due to a sporadic outbreak of the disease, but is rather a wave on the pneumonia tide. This tide, setting in several decades ago, has continued gradually to rise. Such whitecaps as the so-called epidemics which we now see in the large cities serve to direct our attention to its steady encroachments.

Before considering local conditions let us take a glance at the pneumonia situation throughout the country. According to the census of 1900 consumption during that year caused 109,750 deaths, while pneumonia followed a close second with 105,971. Although still slightly behind pulmonary tuberculosis as a cause of death, if anything like the same increase is maintained in the death-rate from pneumonia, and if the consumption-rate continues to fall, or even remains constant, the next census will show pneumonia well established as the principal cause of death in the United States. The increase in the pneumonia death-rate as compared with the decrease in the consumption mortality for 1890 and 1900 is as follows:

	1890.	1900.
Pneumonia........................	76,496	105,971
Consumption........................	102,188	109,750

In other words, 9.06 per cent. of all deaths were due to pneumonia in 1890, and 10.61 per cent. in 1900, while in 1890 12.23 per cent. of deaths were due to consumption, and 10.99 per cent. in 1900.

The difference of comparative death-rates in *rural* communities and in the *cities* is strikingly brought out by the census figures for the year 1900:

	Pneumonia.	Consumption.
Cities	233.1	204.8
Rural	135.9	134.1

The high death-rate among negroes as compared with the whites is also striking:

	Pneumonia.	Consumption.
Colored	349	490.6
White	184.8	173

While the difference between the mortality among the negroes of the country and those of the cities is even more marked:

	Pneumonia.	Consumption.
Cities	346.9	471
Rural	176.7	322

Whites of foreign birth are more susceptible to pneumonia, the figures as compared with those for the native white population being as follows:

Foreign whites	209.8
Native whites	176.7

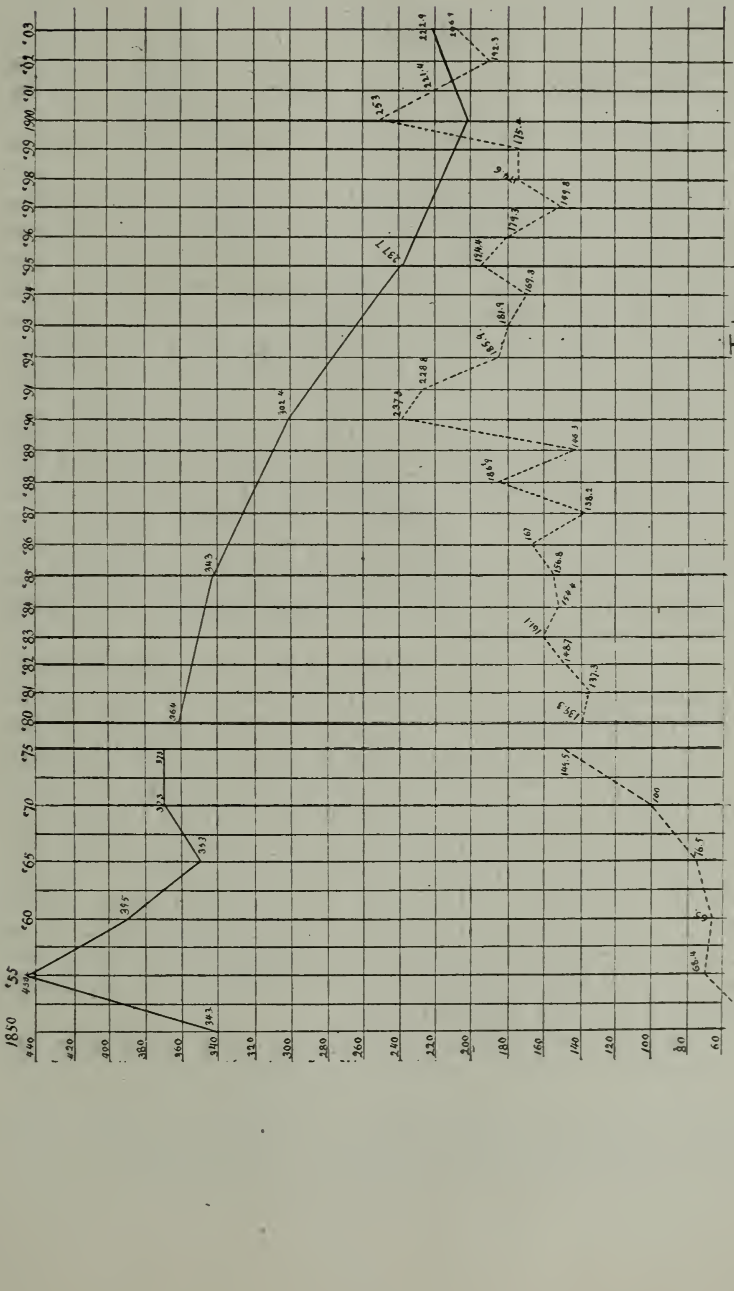
It should be understood that under pneumonia in these statistics are included both lobar and broncho-pneumonia.

With this general review let us consider the history of pneumonia in Baltimore during the past 50 years. The figures are fairly in accord with those of other cities. The accompanying chart shows the advance of the disease. The statistics from 1875 to the present time are fairly satisfactory. From 1850 to 1875 the statistics are rather imperfect. Prior to 1850 they are of little help. The chart does not show the pneumonia figures for the present winter. With almost two pneumonia months before us, one may only guess at the death-rate for the season. It *is* possible, however, to compare the figures from November 1, 1903, to March 5, 1904, with the corresponding period last year:

November 1, 1902, to March 5, 1903	584
November 1, 1903, to March 5, 1904	624

This does not show such an increase as we might expect.

While the general tendency is for the pneumonia curve to rise and the consumption curve to fall, it is to be noted that during pneumonia epidemics, when the pneumonia death-rate is highest, the consumption mortality often reaches its highest figures.



BALTIMORE 1850-1903 Death Rates per 100,000.

A comparison with the mortality tables of New York and Chicago for the same period shows:

	New York.	Chicago.	Baltimore.
Total deaths, all causes	26,195	10,179	3,787
Pneumonia deaths	5,506	2,186	624
Consumption deaths	2,908	970	494
Proportion per cent. of all deaths:			
From pneumonia	21 %	21.4%	16.5%
From consumption	11.1%	9.5%	13.1%

Our mortality is thus seen to compare very favorably with that of other large cities.

During the end of February and the early part of March pneumonia was very prevalent in the city, but the figures for the past two weeks are less alarming. The pneumonia mortality reached its climax with the week ending March 5, when 75 deaths were recorded, and the deaths from all causes numbered 302, as compared with 202 for 1903. Even with these figures it is improbable that the pneumonia death-rate for the season will reach the high-water mark of 1900.

Several explanations have been offered to account for the recent high pneumonia-rate in the city, most of them based on local conditions. One explanation, very generally circulated, attributes the recent high death-rate of Baltimore to exposure resulting from the fire. This seems to me untenable, as the increase did not reach its maximum until nearly five weeks afterwards, and the increase is widespread over the country. Climatic conditions were probably the important factors.

The pneumonia problem in Baltimore is further complicated by the large negro population, which forms from one-sixth to one-seventh of the population. I am, unfortunately, not able to give you the death-rate from pneumonia among the negroes in Baltimore except for one year. The total death-rate from all causes is more than twice that of the whites—315, as compared with 153.2. The United States census figures show the ravages of pneumonia among this race. The very high death-rate for Baltimore for the first week in March—the height of the pneumonia season—illustrates this well, the rate among the negroes being 482 in every 10,000, as compared with 228—an even greater disproportion than usual, and were due principally to the prevalence of respiratory diseases of all kinds among the race.

Of the 1101 deaths from pneumonia in 1903, there were 726 among the whites and 375 among the negroes.

Let us return from a consideration of local conditions to the more general aspects of the subject. So far we have only dealt with the *death-rate* from pneumonia. The *morbidity* or frequency of the occurrence of the disease is more difficult to estimate, as pneumonia is not among those diseases reported to the various health departments. We are dependent upon hospital statistics and the experience of practicing physicians for figures. It would, of course, be possible to explain the unusual death-rate in two ways—either as due to an increasing fatality or to an increasing incidence, with a fatality not necessarily changed. It is agreed on all sides that the higher death-rate is due to a very large extent to the greater frequency of the disease. But does the other factor also play a part, and is pneumonia actually more fatal than formerly? The question has been much discussed and cannot be answered with certainty. The preponderance of opinion seems rather in favor of an increasing fatality. Of recent writers, Reynolds of Chicago is non-committal; Wells considers that the fatality for the past 80 years has remained practically unchanged, while Fraser of Glasgow and J. J. Walsh believe that there has been a distinct increase. Without necessarily assuming an increased virulence on the part of the pneumococcus, an increased fatality is partly explained when we consider that improved hygiene not only preserves a larger number of weakly infants from the ravages of intestinal diseases, but also has prolonged the average duration of life by about four years. We thus have those elements in the population increased among whom pneumonia has always made its heaviest inroads. Further than this I am not able to express a definite opinion on the subject of an increased fatality.

But whatever are our opinions on this subject, there can be but one view on the question of the enormous increase in the frequency of the disease. On what grounds can this be explained, and are there any factors which are not explicable?

It should be remembered that the Baltimore curve fairly represents the general situation. This rise seems to have begun at least half a century ago, and shows a gradual and steady increase up to 1890. I emphasize this fact, because influenza, whatever part it has played since then, does not enter as a factor until that year. Until then it can be ignored. I shall consider successively several factors which may enter in producing this increasing mortality from the disease:

1. *Increased Density of Population.*—The greater prevalence of pneumonia in densely-populated localities has been long recognized, and the difference in the death-rate in urban and rural districts has already been mentioned. The growing tendency to crowd into the cities from the rural districts would then seem to play a not unimportant *rôle.*

2. *General prolongation of life* by several years and the general reduction in mortality from intestinal diseases in young infants increase the proportion of individuals at the extremes of life among

whom the fatality is not only very high, but who are especially susceptible to pneumonia.

3. *Climatic Changes.*—This is an uncertain factor. Sudden and violent change in temperature are said to be more frequent throughout the country than formerly as the result of changes in the forest area. Such violent fluctuations in temperature increase the liability to catarrhal affections of the respiratory system, and may thus indirectly bring about an increased susceptibility to pneumonia. The overheating of dwellings is more widespread than formerly, and is probably a factor in lowering the resistance of the respiratory tract.

4. *Large Influx of Immigration.*—The census returns show a greater susceptibility of foreigners to pneumonia and a higher death-rate among them. The large foreign element congregated in the cities thus helps to swell the death-roll.

5. *The Negro Element in the Population.*—When this exists to any extent, as in Baltiomre, it is an important factor, and an even more important one than would at first appear from a mere comparison of the proportion of negroes to whites in the community. The high death-rate among the negroes is just about balanced by a very high birth-rate. Our mortality figures are thus swelled by an element in the population which maintains a fairly constant ratio with the whites as to the population, but at the same time furnishes proportionately more fuel to the flames.

6. *More Accurate Diagnosis and More Exact Terminology in Vital Statistics.*—There were formerly a larger proportion of obscure cases, such as senile pneumonia and sluggish basal pneumonia, which escaped diagnosis. With the increasing use of the stethoscope these are less frequently overlooked at the bedside. To these are to be added the larger number, which, with increased hospital facilities, are for the first time recognized on the autopsy table. Capillary bronchitis, the bronchitis of infants, "congestion of the lungs," and "lung fever," terms formerly supposed to designate distinct affections, are now largely reducible to lobar or broncho-pneumonia in the statistics.

7. *Decreased Death-Rate from Consumption.*—It has been recently suggested that the lowering of the death-rate from consumption bears a casual relation to the increased pneumonia mortality. It is claimed that in protecting lungs of low resisting power from the ravages of the tubercle bacillus we are but reserving them for surrender to the more violent pneumococcus. On this point I hesitate to express an opinion.

8. *Increased Virulence of the Pneumococcus.*—This is conjectural and as yet unsupported by experimental evidence. It must be remembered that a certain number of cases of pneumonia are not even due to this organism. With an increase in the pathogenicity of the organism we would not only expect an increase in

the fatality, but an actual increase in the incidence of the disease. I can furnish but little evidence of such a dual increase. It is an interesting point that in the banner pneumonia year of 1900, with 1303 deaths, *i. e.*, a death-rate of 253 per 100,000, the percentage of deaths among the pneumonia cases at the Johns Hopkins Hospital reached a very high figure.

In general, from a bacteriological standpoint, the greater prevalence of the disease would be explained on the basis of an increased pathogenicity, or on increased number of the specific organism, or to some factor lowering the resistance of the body, for we are here dealing with an organism which is normally present in many persons without producing any effects.

9. *Influenza.*—The factor already mentioned had come into play prior to 1890. Since then we have had a new factor to deal with second in importance to none. With the advent of the influenza epidemic in the winter of 1889-1890 there was a sudden and rapid rise in the pneumonia mortality, which was certainly not accidental. Subsequent rises in the pneumonia curve have been associated with epidemics of some acute infection of the respiratory passages, which we have agreed to call grippe. The figures for the winter support this. We are forced to the conclusion that what we call the grippe bears a close and intimate relation to many cases of pneumonia, and if not a cause, is certainly a predisposing factor.

10. *Some Unknown Factor.*—It is useless to waste time in speculation on this point. If the factors already mentioned do not entirely explain the increase, we must confess our ignorance and attribute part of the spread of the disease to a factor as yet undetermined. From the standpoint of prevention we have perhaps more to hope from a possible discovery of such an additional factor or factors than from causes which we now recognize, but know to be largely beyond our control.

To sum up our conclusions: There is nothing unusual or peculiar about the pneumonia situation in Baltimore at the present time. A similar state of affairs exists in many places throughout the country. The problem is one of national importance. Although we may be able to explain away some of the facts and to show that in certain respects the increase is more apparent than real, we must acknowledge that the actual increase in the disease is tremendous. The first step towards remedying an evil is to realize its gravity. I have tried to point out the actual situation as it exists today. Up to the present time we have apparently been able to do nothing to stop this advance. I cannot say that the situation looks hopeful from the standpoint of general prophylaxis.

MASSAGE IN MODERN THERAPY.

By Reni Tauer,
Baltimore.

THE fact that massage is an important factor in therapy is well recognized by the body of physicians who follow the modern drift of time and endeavor to return to natural methods. Scientific authorities have recognized the value of manual treatment and recommend it in all branches of medicine and surgery.

Massage is surrounded by a nimbus of great antiquity. Even Hippocrates demanded of the physicians of his time a knowledge of massage, and says: "A hard and stiff joint is made limber through kneading, pressing and rubbing, and a weakened joint is strengthened by means of the same manipulations."

Thus the ancient Greeks employed masseurs to rub, knead, press, and crack the joints when ill. But that which was intended to aid the sufferer was even in those days freely indulged in as a luxury by people of extravagance. Degraded in this manner, massage became known in the Occident, through the Crusaders, as part of the Roman baths. But this was long ago, and the times and morals of a Messalina will hardly return.

Scientists today will not work over a problem for the sake of perfecting cosmetics; they exert their efforts for the benefit of suffering humanity. But untrained and unqualified persons practice massage today, as did old women and shepherds in rough and empiric form in medieval times. Probably the seemingly simple manipulation explains this strange fact.

"Dass er im tinnern Herzen spuert, was er erschafft mit seiner Hand," must be the unswerving principle of the masseur. He must know what he wants to accomplish and what is possible for him to obtain as a result. It is not within the province of this article to describe the technical procedure of massage. I only endeavor to support my assertions so far as not to tempt any possible critic to, *a priori,* throw them aside.

Neurasthenics will undoubtedly always furnish most of the clinical material. Even with the popular general massage of a physically healthy body it is not sufficient to give a technically correct massage, but the manipulator must also perfectly understand its physiological effect. Though invisible, the influence of mechanical touch upon the peripheral nerves is very perceptible to the patient. Slight excitations prove stimulating and pleasant, whilst strong and painful ones are disagreeable to the patient, and are therefore reluctantly borne. But it is the pain that reduces the irritability of the nervous system, and is therefore the healing agency.

It would be a false conception in atrophic conditions of the muscles to mistake the perceptible warmth and the visible reddening of the skin, produced through kneading, as the only result. For the lymph circulation the increased motions of the muscles are an especially important factor, as the lymphatic system does not possess a pumping organ, such as the heart furnishes for the blood, and has for that reason very little spontaneous flow. The centrally-exerted pressure moves not only blood, but also lymph fluid, and at the same time the decomposed products out of the vessels, enhancing the flow of fresh nourishment. Through the kneading and rubbing motion any remains of inflammation are also reduced and pressed into the lymph vessels. But an actual removal of utilized fluid is only possible when the motions are performed so as to prevent any return flow. This, of course, requires an exact knowledge of the course of the capillary system. Whilst these proceedings are not perceived by the layman, they nevertheless represent the main feature of the general effect—the resorption.

Granting a layman were massaging a tubercular inflamed joint or an exudation, being naturally unacquainted with the nature of the affliction, a spreading of the poison over the entire body might immediately result. Equally serious problems confront the masseur in abdominal massage. The manipulations consist, of course, of reposing, redressing, stretching, lifting, holding, kneading, and vibrating the organs, according to the given indications and anatomical conditions.

Again, an absolute knowledge of the position and course of the respective group of muscles is imperative. In the exercise of this portion of the mechano-therapy the operator must constantly bear in mind the physiological effect, so as to avoid the error of masseurs with no special training, who, through their less thoughtful manipulations, create hyperemia where it is not desired.

These few data show quite clearly that a remedy causing such profound changes within the human body should only be practiced by thoroughly qualified hands. Even with perfect technique massage remains in a state of insufficiency if the manipulator lacks mental responsibility. The sharing of this work by a superintending physician I do not consider satisfactory. On other accounts beside lack of technical skill massage may become a direct menace. In cases of fractured bones and transplantation of sinews wrong manipulations can make the result of the previous operation quite doubtful.

It is to the patient's interest to emphasize the fact that massage is a medical art which must be well learned and conscientiously performed, notwithstanding its seeming simplicity. Since massage has become an important healing factor in many different maladies, it is imperative that the practice of the ignorant should not be allowed to decrease its value; and as lay rubbing is miscalled massage, a sharp line must be drawn between the genuine and the spurious.

It must be acknowledged that for the busy practitioner the use of massage is a difficult question, because the execution of a mechano-therapeutic cure requires much time. But every preoccupied physician has younger and less busy hands at his disposal in whose diagnostic and technical knowledge he can place confidence.

The literature on massage has become very extensive within the last 10 years, and the bibliography accompanying most articles is very instructive, so that the student can without difficulty gain a practical knowledge of the subject.

Being once established in anatomical and pathological science, the complicated expressions found in older text-books will not be confusing. I well remember my despair when I endeavored to understand the explicit descriptions of Thure-Brand's method and to memorize the beautiful words, such as "*Heb-halt-vor-neig-spalt-sitzend.*"

Fortunately, the accompanying illustrations teach one through the eye far more impressively than printed words can ever do. The truth is found surprisingly simple and logical.

But all unfavorable features would disappear if this therapeutic branch should receive more attention during the clinical training.

Current Literature.

SURGERY.

Under the Supervision of Hugh H. Young of Baltimore,
Assisted by H. A. Fowler, M.D.

A New Modification of Maydl's Operation for Exstrophy of the Bladder. Prof. T. Borelius, Lund, Sweden. *Centralblatt f. Chirurgie,* No. 29, 1903.

The treatment of exstrophy of the bladder is so difficult and the operative measures so far recommended have been so unsatisfactory that any contribution bearing on this condition is read with a great deal of interest. The so-called autoplastic operations which may be considered the nearest approach to the ideal, and have the advantage of being generally safe, are yet unsatisfactory. Even in successful cases the patient is able to retain his urine for only very short periods. The results are really not worth the trouble. Up to this time Maydl's operation, which consists in transplanting the ureters with a portion of the trigone into the bowel, has offered the best results. Following this operation patients are able to retain their urine for five to six hours, or even longer, and the presence of urine in the lower bowel does not seem to act as an irritant. There is, however, in this procedure the great danger of ascending infection.

Borelius considers Maydl's operation the only one giving anything like satisfactory results in these cases where the defect in the abdominal wall is considerable. In order to diminish the danger of ascending infection he has prepared the following modification which he has carried out in two cases:

An elliptical portion of the base of the bladder containing the ureteral openings is dissected free. The ureters are freed for some distance back, rendering them with the portion of bladder wall freely mobile. The abdominal cavity is then opened. The descending colon is united to the sigmoid by lateral anastomosis in such a way as to form a loop of sigmoid. Into the apex of this loop the portion of bladder with the ureteral openings is implanted. This creates an artificial bladder formed from the loop of sigmoid. The feces do not pass through this loop, but pass through the short circuit produced by the anastomosis.

In the first case in which this technic was carried out, a man, 24 years old, the immediate results were good. The patient had perfect continence and could hold his urine six to eight hours. One month after the operation, however, the patient developed a temperature, had chills and bloody urine. These attacks were repeated at intervals, and three months after the operation the patient died of uremia. Section showed pyelitis and suppurative nephritis of both sides, undoubtedly due to ascending infection. It is to be noted that in this case the conditions for anastomosis were not the most favorable.

The second case was a boy 14 years old. The same technic was carried out, and the anastomosis wound was closed with three layers of silk. In transplanting the trigone one catgut was used for the inner row of sutures. Silk was used for the outer row. There was no leakage. The patient had perfect control of urine and was able to retain it for three hours on an average; at times the period was much longer. The report of this case follows too closely on the operation to say what the ultimate results will be.

It would seem, on theoretical grounds, that this modification of Maydl's operation will go far toward diminishing the danger of ascending infection and will add greatly to our treatment of this difficult condition.

* * *

FURTHER EXPERIENCE WITH THE VERTICAL OVERLAPPING OPERATION FOR THE RADICAL CURE OF UMBILICAL HERNIA. William T. Mayo, Rochester, Minn. *Journal of the American Medical Association,* July 25, 1903.

Mayo again calls attention to the difficulty in securing permanent cure by the methods usually employed in the operative treatment of umbilical hernia, and gives the results in the large number of cases upon which he has operated by the method now associated with his name.

The patient with umbilical hernia is usually obese, the abdominal walls are alternated, and the thin, rigid ring does not offer mechanical conditions favorable to lasting union. The recti muscles at the level of the umbilicus are naturally separated. The attempt to close in layers, bringing the muscles together at this level, really amounts to a muscle transplantation. In a small hernia this would not be difficult, but in larger defects this method is inapplicable. The muscles when so secured do not serve as retentive agents of great value.

In acquired umbilical hernia the separation is due to the downward traction exerted on a fixed point, the umbilicus. There is vertical lengthening of the abdominal wall, as also a slight lateral lengthening.

In 1898 Mayo first called attention to the method of overlapping the aponeuroses vertically in closing the defects in umbilical hernia. The first case was done in 1895. Up to date he has operated on 35 cases of this kind—25 by the vertical and 10 by the lateral method. There has been no death. The majority of these cases have been recently examined. In only one is there a relapse, and in this only a boatshaped stretching. In this patient the lateral method was used. Today the expectation of cure in these cases approaches that of inguinal hernia.

The steps of the operation may be briefly summarized as follows:

1. Transverse elliptical incisions surrounding the umbilicus and hernia.

2. Clearing of the aponeurotic structures two and one-half inches in all directions from the neck of the sac.

3. Division of the fibrous and peritoneal coverings of the hernia. If viscera are present, restitution is made. The contained omentum is ligated and removed with the sac.

4. Incision through the aponeurotic and peritoneal structures of the ring extending one inch or less transversely to each side; separation of the peritoneum from the under surface of the upper of the two flaps thus formed.

5. Mattress sutures of silk or other permanent material, beginning two to two and one-half inches above the margin of the upper flap and grasping the upper margin of the lower flap. Traction is made sufficient to allow closure of peritoneum with running suture of catgut. The three or four mattress sutures are then tied, sliding the entire lower flap under the upper flap between the peritoneum and the aponeurosis.

6. Suture of the free margin of the upper flap to the surface of the lower flap with catgut; closure of the incision in the usual way.

* * *

BROMIDE OF ETHYL AS A GENERAL ANESTHETIC AND AS A PRELIMINARY TO ETHER. William R. Huggard, London. *Lancet*, September 12, 1903.

Bromide of ethyl, which is relatively an unfamiliar anesthetic to American surgeons, is in daily use by the dentists of Germany and Switzerland. Professor Kocher and others use it as a routine preliminary to ether anesthesia. The obvious advantages of its use in connection with ether are its rapidity of action and the absence of struggling. With these, according to Kocher, who has used the drug for nearly 10 years, goes safety, provided care is used in selection of cases and in dosage. At Berine 15 to 30 grams are used at a dose, and in very weak, anemic people, as well as in very young children, bromide of ethyl is considered contraindicated. Gurlt recently reviewed the anesthetic statistics from 1890 to 1897, and found that ethyl bromide had caused but one death in 5228 cases, against one for ether in 5090 cases, and one for chloroform in 2039.

Bromide of ethylene administered in mistake for bromide of ethyl has caused at least three deaths, and the liability of bromide of ethyl to undergo decomposition through exposure to light and air makes great care necessary in handling the drug. Bromide of ethyl (chemically "ether bromatus" or " bromo-ethyl") should be sent out by the manufacturer in hermetically-sealed brown bottles, each containing only enough for a single administration. The amount to be used at a single administration is generally placed at from 10 to 30 grams, but 30 grams have given rise to unpleasant symptoms, such as collapse and cyanosis.

Ethyl bromide is usually given in a tightly-fitting mask, the entire amount being put on the mask and given at one dose. When the raised arm falls the patient is ready for any short operation. Most operators agree that prolonged anesthesia should not be attempted by means of bromo-ethyl—that is, in procedures requiring over two or three minutes. Young children, weak and uremic patients, cases of Bright's disease or of fatty heart, and alcoholics should all be considered unfitted for the use of this form of anesthesia.

* * *

THE PRESENT STATUS OF SPINAL SUBARACHNOID COCAINIZATION. Ernest G. Mark, M.D. *New York and Philadelphia Medical Journal, October* 31, 1903.

The work of Dr. Corning in 1884 demonstrated the feasibility of producing analgesia by spinal injection, and suggested also the possibilities of direct medication by this route. Fourteen years later Bier of Kiel used this form of anesthesia for surgical procedures in a desultory sort of way, and after an unsuccessful experiment on himself gave the method up. In 1899 Tuffier again began experimental work on the subject, and since that time clinical results have been progressively more satisfactory. The objections made to this method have been many. It has been said, in the first place, that an excessively high mortality-rate attends it, but in 2000 European cases there have been only six deaths, and of these six only one (Heumberg's case) could be, without controversy, attributed to spinal cocainization, the autopsy showing a hemorrhage into the cauda equina due to puncture of the spinal veins. In this country but one death has been reported, and in this patient Morton, the operator, said that the autopsy made it very doubtful whether spinal anesthesia was the cause of death.

It is also urged against this method that the toxicity of cocaine varies so with the individual that its use is always dangerous, but the literature of the subject shows 48-100 grain to be the minimum lethal dose, and if we use less than this amount for analgesia we practically eliminate the chance of fatality.

The question of shock following spinal anesthesia suggests a more formidable objection to this method, for the facts that 17 fatalities have followed simple lumbar puncture, and that a definite group of untoward symptoms (rapid pulse, nausea, cramps, headache, chills, etc.) sometimes occur after spinal cocainization, show that the subarachnoid space is not to be tampered with recklessly. This objection, however, holds not against the injection of cocaine, but against disturbance of the cerebro-spinal fluid, and it is one which Morton claims entirely to have obviated by his improved technic. Nicoletti, after experimental work on the subject, says that no anatomical changes are caused in the nervous elements; so that ultimate dangers to the cord and medullary centers is a purely theoretical one, and does not actually exist.

The amount of cocaine used in this country for an injection varies from 10 minims of a 2 per cent. solution to one-half grain of cocaine, and the length of analgesia varies from one-half to four hours. Morton uses it "in preference to ether or chloroform in all cases and for all operations and on any part of the body." Tropo-cocaine has been used by some because its toxicity is less than half that of cocaine, it is less depressing on cardiac ganglia and muscle, recovery from it is rapid, and it is possible to prepare it in stable solution, but Dr. Mark considers none of these arguments as conclusive, and thinks that cocaine is always preferable, the stability of the solution being the only feature of tropo-cocaine worthy of consideration. Eucaine has been tried, but without great success.

The technic of spinal cocainization is quite simple. After sterilizing the cocaine in small tubes, it is dissolved by the addition of sterile, distilled water, and the tubes are then sealed by heat. The patient is then prepared, 15 minims of the 2 per cent. solution are drawn into a syringe, and the needle is inserted between the third and fourth or the fourth and fifth lumbar vertebrae. As soon as a drop of cerebro-spinal fluid oozes from the needle the operator may feel sure that the canal has been entered. An amount of spinal fluid should be allowed to escape equal to the amount of cocaine solution intended to be injected. The injection is then made—whether slowly or rapidly seems to be a matter of indifference. The specific gravity of the cocaine solution is greater than that of the spinal fluid, and therefore Dr. Mark advises that where analgesia above the diaphragm is needed the patient assume a reclining position to favor diffusion of the cocaine. Analgesia is complete in about eight minutes. Contact sense is not destroyed, and in one of Dr. Mark's cases perception of heat and cold persisted.

Morton has improved the technic by injecting no foreign liquid at all, the spinal fluid being drawn directly into the syringe and allowed there to dissolve the cocaine, the solution of cocaine in spinal fluid being then injected into the subarachnoid space.

Subarachnoid cocaine, though of great value in all surgical procedures, is most eminently of use in old prostatics (who are always bad risks on account of arterio-sclerosis and accompanying kidney lesions) and in kidney cases. The method is safe (practically without risk if no more than 48-100 grain is used), shock is decidedly less than when a general anesthetic is used, annoying sequelae and symptoms are slight, but on account of the variability of its analgetic action it is contraindicated in prolonged operative procedures.

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION ON CLINICAL MEDICINE AND SURGERY.

MEETING HELD FRIDAY, JANUARY 15, 1904.

Dr. Robert Johnson reported a case of laparotomy for gunshot wound, the last of a series of five operated on during the year without a death. Patient was a colored boy who had been shot in the abdomen, and when seen one hour later was in great shock, no pulse being palpable at the wrist. Just before the accident he had eaten ice cream and cake. The wound of a 32-caliber bullet was found in Pupart's ligament and led into the abdominal cavity. Laparotomy was done through a median incision. Thirteen perforations in the small intestines and 11 in the mesentery were found. All were sutured. Blood and feces were dipped out of the abdominal cavity, which was then flushed with salt solution, a large quantity of which was left in. The wound was drained with iodoform. The patient made an uneventful recovery, and was well in three weeks.

In a discussion as to the value of salt solution in abdominal work *Dr. Baer* said that he had found it useful in operating on ruptured appendix.

Dr. Gardiner stated that he always washed out the abdominal cavity as a routine measure if there were any soiling of the peritoneum. He had also found it of use in extrauterine cases.

Dr. Harrison said that good results had been obtained both by flushing and by only wiping the peritoneum, and that there were as many opinions on the subject as there were operators.

Dr. Roland emphasized the value of salt solution in obstetrical practice, and particularly the use of large quantities in eclampsia.

Dr. Williams and Dr. Reuling, who were to have read papers, were absent, and the meeting was, on motion, devoted to volunteer report of cases by Drs. Gardiner, Branaham, and Chambers.

MEETING HELD FEBRUARY 6, 1904.

Dr. H. G. Beck showed two cases of amebic abscess of the liver which had been admitted to the City Hospital within a week. Thirty-four cases of this condition have occurred at the City Hospital and four have recovered—two without and two with amebae in the stools. The first patient was a man of 32, whose first attack of dysentery began in 1900. He gave a history of having drunk well water. The symptoms were frequent stools, chills, night sweats, abdominal pains, loss of weight, edema of the feet and legs, and blood in the stools. The amebae were found and patient was started on quinine sulphate. Abscess formed, and an operation was done on June 20, the liver being aspirated and then the abscess opened and drained. Two connecting cavities were found. Recovery was uneventful. Six months after operation no amebae could be found, and two and one-half years have since elapsed, with no return of symptoms. The second case contracted dysentery at Fortress Monroe in 1888, and was discharged in 1890 from the army with incurable diarrhea. In 1894, however, his health was good, but in 1901 he began to have pain in liver, nausea and vomiting, great depression, with some enlargement and tenderness of the liver, but no leucocytosis. He was operated on in June, and at the end of July discharged cured. About four months later there was recurrence of all the symptoms, and in December a second operation was done. This was followed by improvement, but in June amebic dysentery reappeared, responding to treatment, only to recur again.

Dr. Cary Gamble said that the interesting point about the first case was that amebae left the stools after the operation. Irrigations in amebic dysentery increase the danger of perforation, for death does occur in the acute stage in spite of what the pathologists say to the contrary. To avoid this danger I have been giving quinine internally in pills whose coating is undissolved until it reaches the intestines. The patients are thus cinchonized just as malarial patients are, and the good results may be due to the toxic action of quinine on the amebae, which belong to the same family as the malarial parasite.

Dr. S. T. Earle said that he always treated his cases with irrigations of silver nitrate and quinine, and Dr. Kirby reported having seen irrigating fluid in the abdominal cavity of amebic cases post-mortem. Dr. Earle stated that a rectal tube of the sort most frequently used cannot, as a matter of fact, be inserted, and that it really catches on the rectal folds. He always gives irrigations in the knee-chest or the Sims position, and finds no difficulty in making the irrigation run in.

A paper was read on chronic interstitial nephritis in the young. This condition is usually seen in connection with arterio-sclerosis, and hence we expect it only in the later years when the causes of arterio-sclerosis have had a chance to do their work. Osler, Senator, Flint, and others say that it is quite rare in children, and we would naturally expect this, inasmuch as lead poisoning, syphilis, diabetes, overeating, etc., play no important part in early years. In adults males are affected with this form of nephritis more often than females, but in infants the case is reversed. Dickinson reported 300 cases, only one of which was under 11 years, and recently a case under 14 has been reported. Heubner thinks that the condition is rarely primary, and always follows an acute gastritis, pneumonia, or some such disease. Heredity and congenital lues may play a part, for there have been many cases showing a familiar character. Two cases were reported, the first of which was 14 years old and complained of bleeding from the gums. The child had poor appetite, headaches and frequent micturition, and was weak and restless. Urine contained a trace of albumen and a few casts. Death occurred three weeks after onset, and the autopsy showed an atheromatous aorta, with contracted granular kidneys. The second case was 18 years of age and complained of frequent micturition. Her urine contained albumen, hyaline casts, and a few pus-cells. There was some anasarca. Autopsy showed an enlarged heart, a very small aorta, and extremely contracted kidneys, the right one weighing but 18 and the left 22 grams. This relation between contracted aorta and granular kidneys has been noticed quite frequently in the literature.

MEETING HELD FEBRUARY 19, 1904.

Dr. H. Cushing showed two cases. The first had been admitted to Dr. Osler's service at the Johns Hopkins Hospital complaining of disability of gait and pain in the left arm, paroxysmal in character, not severe, increased by sneezing, etc. One year later sensory symptoms developed on the right side. The diagnoses suggested were tuberculosis of the bone reaching the cord, chronic cervical pachymeningitis, syringomyelia, tremor, and hematomyelia. Symptoms pointed to a lesion of the sixth or seventh cervical segment. Lamimectomy was done, an intradural spinal tremor (fibro-sarcoma) found and removed. All symptoms disappeared immediately, and the man is now quite well. The second case had been shot in the forehead two years previously, developing later left-sided paralysis and facial twitching, with a difficulty of motor speech. Several operations were done, and finally the bullet was removed. Soon after the patient developed epileptic convulsions without aurae or Jacksonian characteristics. The patient was also too easily amused, and cried easily, suggesting a frontal-lobe lesion. An *x*-ray showed the bullet. A Wagner flap was turned down, fine adhesions broken up, and the scar of the bullet-track and the bullet itself found.

Dr. L. K. Hirschberg read a paper on "Pseudo-bulbar Paralysis," a condition first described by Joffroy in 1872 and characterized by bulbar symptoms, without demonstrable lesions in the bulbar nuclei. The symptom-complex may, indeed, be due to various pathological conditions. Gradual progression, electrical changes, and tremors distinguish the Duchenne type of bulbar paralysis from the false type; atrophy distinguishes polio-encephalitis; recovery distinguishes myasthenia gravis. Pseudo-bulbar paralysis occurs after two apoplectic attacks; shows normal electrical reactions and more or less marked mental changes (aphasia, involuntary laughing and crying, etc.). There is often a history of lues. Arterio-sclerosis of the basilar vessels and foci in both hemispheres have been found pathologically.

Dr. Hirschberg's patient complained of poor locomotion, and gave a luetic and marked alcoholic history. Two attacks of apoplexy had occurred, and after the last both legs and arms had been paralyzed, memory had been poor, and some delusions present; voice was weak and hoarse; palate reflex gone on left side. No improvement had occurred under specific treatment.

Dr. Thomas said that this condition was not an entity at all, but a symptom of varied pathological conditions, and the name "pseudo-bulbar paralysis" was a poor one. One apoplectic stroke leaves no palsy of these muscles because they are bilaterally represented, but after a stroke affecting each side the condition occurs.

Dr. A. C. Harrison reported a case of multiple pelvic fracture, with rupture of urethra and bladder. The man had been admitted badly shocked. and suffering with great pain, paralysis of the legs, desire but inability to urinate; catheter obtained only blood. Operation revealed multiple fracture of the pelvis, an extraperitoneal rupture of the urethra, the prostatic portion having been stripped out of the prostate. Tube and gauze drainage were inserted suprapubically and perineally; no suture of bladder or urethra was done. Recovery was good. Patient now passes urine six or eight times during the day, sometimes not getting up at all at night; passes a 26 sound with ease, and there is no bleeding. He has no erections (injury to pudic nerve?), but desire is present, and ejaculation occurs on masturbation.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD FEBRUARY 15, 1904.

Dr. Little showed a new tube for uterine cultures, devised by himself as a modification of the Diderlein tube. The latter is perfectly satisfactory when the lochia flow freely, and there is no difference between the cervix and fundus as to bacterial contact. The tube is, however, somewhat difficult to work, the rubber portion often kinking in an annoying manner. In Dr. Little's modification the end of the piston is formed by an ordinary elastic band, which is attached to a thread running down the tube, and lies loose in the uterine cavity until drawn into the glass tube by the operator.

Dr. Goldthwaite read a paper on the so-called rheumatoid diseases. His attention to this class of cases had been called out by the swamping of his clinic by chronic cripples unloaded on him from the general practice of Boston. Study of the condition had led him to a new classification of joint affections based on pathological conditions:

(1) Dry, hyperemic, relaxed or villous arthritis, a local condition characterized by congestion and folding of the joint membranes, occurs often in the knee, and is frequently accompanied by flatfoot. Treatment is by

(2) "Rheumatoid" (better, atrophic) arthritis, a progressive condition characterized by swelling, followed by atrophy of joint and periarticular structures.

(3) "Osteo-arthritis" (better, hypertrophic arthritis), a very common form, characterized by Heberden's nodes, thickening of cartilages and of bone; essential characteristic is hypertrophy; true ankylosis rare, but motion may be restricted. When spine is affected pressure pains are common.

(4) Infectious arthritis. The absorption of any toxin may give a joint trouble; the absorption of the organisms themselves gives a specific arthritis. Rheumatism, since it is quite similar in its pathology to other infections, is probably due to unknown organisms. The pathology and treatment of all these forms are similar, and they are subdivided into groups according to the infecting organism. In typhoid fever we may have the typhoid spine (due to absorption of the toxin) or a bone abscess (due to the organisms themselves).

(5) Gout. Here there is a deposit of sodium urate and a constant bone change.

The treatment of these conditions varies with the form. In the villous type treatment is expectant unless it is plain that removable villi are present. In the atrophic form local and general stimulating treatment modify the condition, perhaps even arrest it. In the hypertrophic form protection of the joint is indicated in the acute stage, and later incision of the nodes if they are interfering with function. In the infectious form the same line of treatment is indicated as would be used in fighting a septicemia. Baths and depressing drugs should be avoided, and salicylates are *only* indicated in the early stages, giving way later to stimulating drugs.

Dr. Painter discussed the pathology of these conditions. In the villous form there is a swelling of the capsule, a hypertrophy of the blood-vessels, and an infiltration with red-blood corpuscles. Little fluid is present. The cartilage shows a striation, it is thin, and does not glisten normally. In the hypertrophic type there is no thickening of the capsule, and the cartilage, though thickened, does not become striated or lose its glistening appearance. In the atrophic form the bone becomes smaller, the trabeculae diminish in number and size, and there is a deposit of fat in the intertrabecular tissue. In the infectious forms there is a general infiltration of all the elements more symmetrical than in the villous form. By MacRudden's new method the metabolism has been estimated in these rheumatoid conditions, and it has been found that the calcium and magnesium in the feces of these patients is double that in normal feces and double the amount ingested.

Dr. McCrae said that the following classification of arthritis had been adopted at the Johns Hopkins Hospital: (1) Infectious cases with definite bacterial limits; (2) Gout; (3) Rheumatic fever—probably several organisms are concerned; (4) Rheumatoid condition, characterized by atrophy—hypertrophy which represent different manifestations of the same disease, and are due to the toxins of many organisms; (5) Still's disease—infectious, accompanied by enlarged spleen. There is a definite series from this arthritis deformans of children up to the adult form.

Dr. Finney said that he had removed lipoma arborescens from many joints, but that he had done it in a half-hearted way. Since hearing Dr. Goldthwaite's paper, however, he would attack these cases with more confidence.

Dr. Young called attention to the variety of pathological conditions seen in gonorrheal joints—from those cases with little fluid and no joint destructions to those with great destructive changes.

Dr. Bloodgood said that this variation in the pathological picture bears a pretty close relation to the duration of the disease. In infectious arthritis opening and irrigating the joint may cause the process to recede and give a good functional result, but later scar tissue forms and poor function results. Early recognition is therefore important.

Dr. Emerson said that diminished calcium and magnesium content in the feces had been observed in other conditions (diabetes) in which there was no bone change.

Dr. Goldthwaite, in closing the discussion, said that the atrophic and hypertrophic forms of arthritis, though different diseases, might coexist. They appear, however, at entirely different times of life. In gonorrheal joints he advised waiting until there were signs of infiltration of the capsule and then opening and irrigating. The ultimate results of surgical interference in rheumatoid cases depend on the particular case. In one of his patients who had a mass of villi in his kneejoint like a bag of earth worms, the villi were removed, and the function of the knee has been greatly improved. The cases can always be helped some.

AMENDED CONSTITUTION AND BY-LAWS OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND, AS REVISED BY THE SPECIAL COMMITTEE APPOINTED AT THE SEMIANNUAL MEETING OF 1903.

CONSTITUTION.

Article I.—Name of the Society.

The name and title of this, the State Medical Society, shall be *The Medical and Chirurgical Faculty of the State of Maryland.*

Article II.—Purposes of the Society.

The purposes of this Faculty shall be to federate and bring into one compact organization the entire medical profession of the State of Maryland, and to unite with similar societies of other States to form the American Medical Association; to extend medical knowledge and advance medical science; to elevate the standard of medical education, and to secure the enactment and enforcement of just medical laws; to promote friendly intercourse among physicians; to guard and foster the material interests of its members and to protect them against imposition, and to enlighten and direct public opinion so that the profession shall become more capable and honorable within itself, and more useful to the public, in the prevention and cure of disease, and in prolonging and adding comfort to life.

Article III.—Component Societies.

The component societies of this Faculty are those county medical societies and the Baltimore City Medical Society which hold charters from the Medical and Chirurgical Faculty of Maryland.

Article IV.—Composition of the Faculty.

Section 1. This Faculty shall consist of members, honorary members, and delegates.

Sec. 2. *Members.*—The members of this Faculty shall be the members of the component medical societies.

Sec. 3. *Delegates.*—Delegates shall be those members who are elected in accordance with this Constitution and By-Laws to represent their respective component societies in the House of Delegates of this Faculty.

Sec. 4. *Honorary Members.*—The title of honorary member may be conferred upon any distinguished member of the Americal Medical Association residing out of the State, or upon any distinguished foreign physician, upon recommendation of the Council.

Sec. 5. *Guests.*—Any distinguished physician not a resident of this State who is a member of his own State association may become a guest during any annual session on invitation of this Faculty, and shall be accorded the privilege of participating in all of the scientific work for that session.

Article V.—House of Delegates.

The House of Delegates shall be the legislative and business body of the Faculty, and shall consist of (1) delegates elected by the component societies, (2) the Councilors, and (3) *ex-officio,* the President, Secretary, and Treasurer of this Faculty, and the chairmen of the Board of Trustees and the Library Committee.

ARTICLE VI.—COUNCIL.

The Council shall consist of the Councilors and the President, Secretary, and Treasurer, *ex-officio.* Besides its duties mentioned in the By-Laws, it shall constitute the Finance Committee of the House of Delegates. Five Councilors shall constitute a quorum.

ARTICLE VII.—SECTIONS AND DISTRICT SOCIETIES.

The House of Delegates may provide for a division of the scientific work of the Faculty into appropriate sections and for the organization of such Councilor District Societies as will promote the best interests of the profession, such societies to be composed exclusively of members of component societies.

ARTICLE VIII.—SESSIONS AND MEETINGS.

SECTION 1. The annual meeting of the Faculty shall be held in the city of Baltimore, beginning on the fourth Tuesday of April, and semiannual meetings may be called at such time and place as the Council may designate. During these meetings there shall be held daily general sessions, which shall be open to all registered members and guests.

SEC. 2. Special meetings of either the Faculty or the House of Delegates shall be called by the President or on petition of 10 delegates or 20 members.

SEC. 3*a*. For the promotion of its scientific work the Baltimore City Medical Society of the Faculty shall be divided into sections, as follows:

Section 1. Clinical Medicine, Pathology, and Surgery.
Section 2. Obstetrics and Gynecology.
Section 3.—Neurology and Psychiatry.
Section 4. Ophthalmology and Otology.
Section 5. Laryngology and Rhinology.

And as many more sections as may at any time be proposed in writing by 10 members of that society, and approved by a vote of three-fourths of the members present at a stated meeting.

b. Each section shall elect its own officers annually and establish regulations for its own government not repugnant to the Constitution and By-Laws of the Faculty, each section being subordinate to the Faculty in all matters wherein the latter shall be concerned.

c. Any member of the Faculty may elect to attend as many of the sections as he desires, but in order to be enrolled and receive notices of said section meetings he shall register his name with the Secretary of each of such sections.

ARTICLE IX.—OFFICERS.

SECTION 1. The officers of this Faculty shall be a President, three Vice-Presidents, a Secretary, a Treasurer, a Board of 10 Trustees, a State Board of Medical Examiners, as provided by law, and 11 Councilors, who shall be chosen as follows: Two from the Eastern Shore, four from the Western Shore, outside of Baltimore city, and five from Baltimore city.

SEC. 2. The officers shall be elected annually as hereinafter provided. The President shall appoint the first Councilors, to serve for one year, or until their successors are elected. The terms of the elected Councilors shall be for three years, those first elected serving one, two, and three years, as may be determined by lot. The House of Delegates shall nominate to the Faculty the members of the Board of Medical Examiners. The Board of Medical Examiners shall be elected by said Faculty in accordance with the provisions of the State law. All of these officers shall serve until their successors are elected and installed.

SEC. 3. The officers of this Faculty shall be elected by the House of Delegates on the morning of the last day of the annual session. No person shall be elected to any office who has not been a member of the Faculty for the preceding two years and paid his dues in full.

ARTICLE X.—RECIPROCITY OF MEMBERSHIP WITH OTHER STATE SOCIETIES.

In order to broaden professional fellowship, this Faculty may arrange with other State Medical Associations for interchange of certificates of membership, so that members moving from one State to another may avoid the formality of re-election.

ARTICLE XI.—FUNDS AND EXPENSES.

Funds shall be raised by a per capita assessment on each component society. The amount of the assessment shall be $2 per capita per annum for members of the county societies and $6 for members of the Baltimore City Medical Society. Funds may also be raised by voluntary contributions, from the sale of the Faculty's publications, and in any other manner approved by the House of Delegates. Funds may be appropriated by the House of Delegates to defray the expenses of the Faculty, for publications, and for such other purposes as will promote the welfare of the profession. All resolutions appropriating funds must be referred to the Finance Committee for its approval by at least a two-thirds vote of said committee before action is taken thereon.

ARTICLE XII.—REFERENDUM.

SECTION 1. A general meeting of the Faculty may, by a two-thirds vote of the members present, order a general referendum on any question pending before the House of Delegates, and when so ordered the House of Delegates shall submit such question to the members of the Faculty, who may vote by mail or in person, and if the members voting shall comprise a majority of all the members of the Faculty, a majority of such vote cast shall determine the question and be binding on the House of Delegates.

SEC. 2. The House of Delegates may, by a two-thirds vote of its own members, submit any question before it to a general referendum, as provided in the preceding section, and the result shall be binding on the House of Delegates.

ARTICLE XIII.—THE SEAL.

The Faculty shall have a common seal, with power to break, change, or renew the same at pleasure.

ARTICLE XIV.—AMENDMENTS.

The House of Delegates may amend any article of this Constitution by a two-thirds vote of the delegates present at any annual session, provided that such amendment shall have been presented in open meeting at the previous annual or semiannual session, and that it shall have been sent officially to each component society at least two months before the meeting at which final action is to be taken.

BY-LAWS.

CHAPTER I.—MEMBERSHIP.

SECTION 1. The members of this Faculty shall be the members of the component medical societies.

SEC. 2. No person who is under sentence of suspension or expulsion from a component society, or whose name has been dropped from its roll of members, shall be entitled to any of the rights or benefits of this Faculty or be permitted to take part in any of its proceedings until he has been relieved of such disability.

SEC. 3. Each member in attendance at the sessions of the Faculty shall register his name on the registration book, indicating the component society of which he is a member. No member shall take part in any of the proceedings of any session until he has complied with the provisions of this section.

CHAPTER II.—TRUSTEES.

SECTION 1. The Board of Trustees, as at present constituted, shall continue in office, and, as heretofore, one member shall retire annually and one be elected annually for 10 years. They shall have authority to fill vacancies in said Board caused by death or resignation until the next annual meeting. The management and disposal of the property of the Faculty shall be vested in them, subject to the approval of the Faculty. They shall have access to the documents of the Faculty in the care of the Secretary, collect all rents, and pay over to the Treasurer of the Faculty any surplus after the sale of any property and after the payment of any expenses legally charged against said property.

SEC. 2. They shall elect annually from their membership a President, Secretary and Treasurer. They shall at the annual meeting, through their proper officers, render, in writing, a report to the House of Delegates of the Faculty, giving the value of the buildings and indebtedness, if any, on the same, and a financial statement of their receipts and expenditures during the past fiscal year.

CHAPTER III.—GENERAL MEETINGS.

SECTION 1. All registered members may attend and participate in the proceedings and discussions of the general meetings. The general meetings shall be presided over by the President or one of the Vice-Presidents, and at such meetings shall be delivered the address of the President and the orations.

SEC. 2. The general meeting may recommend to the House of Delegates the appointment of committees or commissions for scientific investigation of special interest and importance to the profession and public.

Chapter IV.—House of Delegates.

Section 1. The House of Delegates shall meet at 2 P. M. on the day fixed as the first day of the meeting. It may adjourn from time to time as may be necessary to complete its business, provided that its hours shall conflict as little as possible with the general meetings. The order of business shall be arranged as a separate section of the program.

Sec. 2. Each component society shall be entitled to send to the House of Delegates each year one delegate for every 50 members, and one for each major fraction thereof, but each component society which has made its annual report and paid its assessment as provided in this Constitution and By-Laws shall be entitled to at least one delegate.

Sec. 3. Ten members of the House of Delegates shall constitute a quorum.

Sec. 4. It shall, through its officers, Council and otherwise, give diligent attention to and foster the scientific work and spirit of the Faculty.

Sec. 5. It shall make careful inquiry into the condition of the profession of each county in the State, and shall have authority to adopt such methods as may be deemed most efficient for building up and increasing the interest in such county societies as already exist, and for organizing the profession in counties where societies do not exist. It shall systematically endeavor to promote friendly intercourse among physicians of the same locality.

Sec. 6. It shall elect representatives to the House of Delegates of the American Medical Association in accordance with the Constitution and By-Laws of that body.

Sec. 7. It shall, upon application, provide and issue charters to county societies organized in conformity with the spirit of this Constitution and By-Laws.

Sec. 8. It shall divide the State into Councilor districts, specifying what counties each district shall include, and, when the best interest of the Faculty and profession will be promoted thereby, organize in each a district medical society, and all members of component societies, and no others, shall be members of district societies. When so organized, from the President of such district societies shall be chosen the Vice-Presidents of this Faculty, and the presidents of the county societies of the district shall be vice-presidents of such district societies.

Sec. 9. It shall have authority to appoint committees for special purposes from among members of the Faculty who are not members of the House of Delegates. Such committees shall report to the House of Delegates, and may be present and participate in the debate on their reports.

Chapter V.—Election of Officers.

Section 1. All elections shall be by ballot, and a plurality of the votes cast shall constitute an election.

Sec. 2. The election of officers shall be the first order of business of the House of Delegates after the reading of the minutes on the morning of the last day of the general session.

Chapter VI.—Duties of Officers.

Section 1. The President shall preside at all meetings of the Faculty and of the House of Delegates; shall appoint all committees not otherwise provided for; he shall deliver an annual address at such time as may be arranged by the Committee on Scientific Work, and he shall preserve order, enforce the observance of the Constitution and By-Laws, and give the casting vote in all cases of equal division.

Sec. 2. The Vice-Presidents shall assist the President in the discharge of his duties. In the event of the President's death, resignation or removal the Council shall select one of the Vice-Presidents to succeed him.

Sec. 3. The Secretary shall attend all the general meetings of the Faculty and the meetings of the House of Delegates, and shall keep minutes of their respective proceedings in separate record books. He shall be *ex-officio* Secretary of the Council. He shall be custodian of all record books and papers belonging to the Faculty, except such as properly belong to the Treasurer, and shall keep account of and promptly turn over to the Treasurer all funds of the Faculty which come into his hands. He shall provide for the registration of the members and delegates at all sessions. He shall, with the co-operation of the secretaries of the component societies, keep a card-index register of all the legal practitioners of the State by counties, noting on each his status in relation to his county society, and, on request, shall transmit a copy of this list to the American Medical Association. He shall aid the Councilors in the organization and improvement of the county societies and in the extension of the power and usefulness of this Faculty. He shall conduct the official correspondence, notifying members of meetings, officers of their election, and committees of their appointment and duties. He shall employ such assistants as may be ordered by the House of Delegates, and shall make an annual report to the House of Delegates. He shall supply each component society with the necessary blanks for making their annual reports, shall keep an account with the component societies, charging against each society its assessment, collect the same, and at once turn it over to the Treasurer. Acting with the Committee on Scientific Work, he shall prepare and issue all programs. The amount of his salary shall be fixed by the Council.

Sec. 4. He may appoint one or more members of the Faculty in good standing as Assistant Secretaries, to whom he may allot the duties usually pertaining to those of Assistant, Corresponding, and Reporting Secretary, the names of said appointees to be announced previous to the adjournment of the annual convention; the tenure of office of those appointees to be at the pleasure of the Secretary.

Sec. 5. The Treasurer shall give bond in the sum of $2500, the premium on which shall be paid by the Faculty. He shall demand and receive all funds due the Faculty, together with the bequests and donations. He shall pay money out of the treasury only on a written order of the President, countersigned by the Secretary; he shall subject his accounts to such examination as the House of Delegates may order, and he shall annually render to the House of Delegates an account of his doings and of the state of the funds in his hands. He shall pay the vouchers of the Library Committee not to exceed the amount of the annual appropriation made by the House of Delegates for the support of the library.

CHAPTER VII.—COUNCIL.

SECTION 1. The Council shall meet on the day preceding the annual session, and daily during the session, and at such other times as necessity may require, subject to the call of the chairman, or on petition of three Councilors. It shall meet on the last day of the annual session of the Faculty to organize and outline work for the ensuing year. It shall elect a chairman from its own membership, and a clerk, who, in the absence of the Secretary of the Faculty, shall keep a record of its proceedings. It shall, through its chairman, make an annual report to the House of Delegates.

SEC. 2. Each Councilor shall be organizer and censor for his district. He shall visit the counties in his district at least once a year for the purpose of organizing component societies where none exist. He shall make an annual report of his work and of the condition of the profession of each county in his district at the annual session of the House of Delegates.

SEC. 3. The Council shall be the Board of Censors of the Faculty. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies, or to this Faculty. All questions of an ethical nature brought before the House of Delegates or to the general meeting shall be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members of component societies on which an appeal is taken from the decision of an individual Councilor, and its decision in all such matters shall be final.

SEC. 4. In sparsely-settled sections it shall have authority to organize the physicians of two or more counties into societies to be suitably designated so as to distinguish them from district societies, and these societies, when organized and chartered, shall be entitled to all rights and privileges provided for component societies.

SEC. 5. The Council shall provide for and superintend the publication and distribution of all proceedings, transactions, and memoirs of the Faculty, and shall have authority to appoint an editor and such assistants as it deems necessary. All money received by the Council and its agents, resulting from the discharge of the duties assigned to them, must be paid to the Treasurer of the Faculty. As the Finance Committee, it shall annually audit the accounts of the Treasurer and Secretary, and other agents of this Faculty, and present a statement of the same in its annual report to the House of Delegates, which report shall specify also the character and cost of all the publications of the Faculty during the year and the amount of all other property belonging to the Faculty under its control, with such suggestions as it shall deem necessary. In the event of a vacancy in the office of the Secretary or the Treasurer, the Council shall fill the vacancy until the next annual election. It shall, as the Finance Committee, recommend the amount of money to be appropriated by the House of Delegates for the use of the Library Committee from itemized estimates submitted by the *outgoing* Library Committee at the previous annual meeting.

CHAPTER VIII.—COMMITTEE.

SECTION 1. The standing committees, which shall be elected by the House of Delegates, shall be as follows: A Committee on Scientific Work, a Committee on Public Policy and Legislation, a Committee of Arrangements, a

Library Committee, and such other standing committees as may be necessary.

Sec. 2. The Committee on Scientific Work shall consist of three members, of which the Secretary shall be one, and shall determine the character and scope of the scientific proceedings of the Faculty for each session, subject to the instructions of the House of Delegates. Fifteen days previous to each session it shall prepare and issue a program announcing the order in which papers, discussions, and other business shall be presented.

Sec. 3. The Committee on Public Policy and Legislation shall consist of three members and the President and Secretary. Under the direction of the House of Deegates it shall represent the Faculty in securing and enforcing legislation in the interest of public health and of scientific medicine.

Sec. 4. The Committee of Arrangements shall provide suitable accommodations for the meeting-places of the Faculty and of the House of Delegates, and of their respective committees, and shall have general charge of all the arrangements. Its chairman shall report an outline of the arrangements to the Secretary, at least 20 days before the date of meeting, for publication in the program, and shall make additional announcements during the session as occasion may require.

Sec. 5. The Library Committee, as early as possible after the adjournment of each annual meeting, shall appoint a librarian, who shall, during April of each year, make a written report for the committee. It shall have charge of the library, subject to such rules as the House of Delegates may adopt, and shall select and purchase books and journals with the funds appropriated by the House of Delegates for that purpose. At each annual meeting this committee shall submit a report of its transaction to the House of Delegates, and shall include therein an itemized estimate of anticipated expenses for the following year.

Chapter IX.—Component Societies.

Section 1. All county societies and the Baltimore City Medical Society, when they have adopted principles of organization in conformity with this Constitution and By-Laws, shall, on application, receive a charter from and become a component part of this Faculty.

Sec. 2. Charters shall be issued only upon approval of the Council or House of Delegates, and shall be signed by the President and Secretary of this Faculty. The Council or the House of Delegates shall have authority to revoke the charter of any component society whose actions are in conflict with the letter or spirit of this Constitution and By-Laws, after due investigation and determination.

Sec. 3. Only one component medical society shall be chartered in any county or in the city of Baltimore.

Sec. 4. Each component society shall judge of the qualification of its own members, but as such societies are the only portals to this Faculty and to the American Medical Association, every reputable and legally-registered physician does not practice or claim to practice or lend his support to any exclusive system of medicine shall be eligible for membership.

Sec. 5. When a member in good standing in a component society moves to another county in this State, his name, on request, shall be transferred without cost to the roster of the county society into whose jurisdiction he moves.

SEC. 6. A physician living near a county line may hold his membership in that county most convenient for him to attend on permission of the society in whose jurisdiction he resides.

SEC. 7. At some meeting in advance of the annual session of this Faculty each component society shall elect a delegate to represent it in the House of Delegates of this Faculty in the proportion of one delegate to each 50 members or major fraction thereof, and the secretary of the society shall send a list of such delegates to the Secretary of this Faculty at least 10 days before the annual sessions.

SEC. 8. The secretary of each component society shall keep a roster of its members, and also a list of the non-affiliated registered physicians of the county, in which shall be shown the full name, address, college and date of graduation, date of license to practice in the State, and such other information as may be deemed necessary. In keeping such roster the secretary shall note any changes in the personnel of the profession by death or by removal to or from the county, and in making his annual report he shall account for every physician who has lived in the county during the year.

SEC. 9. The secretary of each component society shall forward its assessment, together with its roster of officers and members, list of delegates, and list of non-affiliated physicians of the county to the Secretary of this Faculty each year 10 days before the annual session.

SEC. 10. Any component society which fails to pay its assessment or make the report required on or before the date named in Section 10 shall be held as suspended, and delegates of such delinquent societies shall not be permitted to participate in the proceedings of the House of Delegates until such requirements shall have been met.

CHAPTER X.—MISCELLANEOUS.

SECTION 1. No address or paper before the Faculty, except those of the President and orator, shall occupy more than 20 minutes in its delivery, and no member shall speak longer than five minutes, nor more than once on any subject, except by unanimous consent.

SEC. 2. All papers read before the Faculty shall become its property, and a copy of each paper shall be deposited with the Secretary when read.

SEC. 3. The deliberations of this Faculty shall be governed by parliamentary usage as contained in Robert's Rules of Order, when not in conflict with this Constitution and By-Laws.

SEC. 4. A motion to refer to the House of Delegates any subject, resolution or memorial which has been presented to the general meeting of the Faculty shall not be debatable.

SEC. 5. The principles of medical ethics of the American Medical Association shall govern the conduct of members in their relation to each other and the public.

CHAPTER XI.—AMENDMENTS.

These By-Laws may be amended at any annual meeting by a majority vote of all the delegates present at that session after the amendment has laid on the table for one day.

MARYLAND MEDICAL JOURNAL.

JOHN S. FULTON, M.D., *Editor.*

Associate Editors:

THOMAS R. BROWN, M.D. | HUGH H. YOUNG, M.D.
ROBERT REULING, M.D. | JOSE L. HIRSH, M.D.

BALTIMORE, MAY, 1904

THE SIMPLIFICATION OF CRIME; OR, EVERY MAN A CORONER.

PHILADELPHIA'S murder syndicate is the sensation of the season in police circles. Associated Press dispatches have kept the public supplied with the "'orrible and disgustin' details" of an infernal traffic which probably exists in every great city, but is seldom dragged into the light of day. Feticide is a profitable trade to the skillful, and safer than any other sort of unlawful killing. There are in Baltimore, as in other large cities, numerous establishments whose business is criminal abortion. One does not have to cultivate a wide acquaintance in the under world in order to locate these scientific butcheries. The information is distributed from house to house in time for breakfast six or seven days in every week.

Whether our specialists in embryotomy incinerate living babes is not a very profitable inquiry. If one of them should be so sincere as to proclaim in the public press that his practice is limited strictly to feticide, no fellow-craftsman would follow suit. If, on the other hand, the charge were made that every one of these establishments is able and ready for a price to destroy a living infant, not a hag's brat in the fraternity would deny it. What reason on earth is there for believing that the Philadelphia specialists serve the public better than their Baltimore *confreres?* Philadelphia has no extraordinary advantages over Baltimore so far as this particular line of business is concerned. It is probably true that Baltimore has a much better police department, but a wide-awake police department is a menace only to bunglers in the trade. The probability is that the Baltimore specialist has superior qualifications. A few women perish, and perhaps not very many babes. The Health Department keeps account of the deaths of adults occurring under the care of these specialists, and the bodies cannot be disposed of until the facts, including the cause of death, have been certified over the signature of the attending physician to the satisfaction of the Health Department. To abolish this responsibility would be to invite a deteriorating standard of public service on the part of the abortionists.

Wherever carelessness or ignorance may go unpunished there will the careless and ignorant prefer to practice. Recently-enacted legislation provides immunity for careless and ignorant embryotomists. It is necessary to proclaim these new-found advantages of Baltimore and Washington in order that they may not be independently discovered by those who are most interested. If the strain of police surveillance is too strict for any overworked specialist in Baltimore or Washington, it is only necessary for him to set up a sanitarium in the Maryland suburbs and to ask the county commissioners to appoint him the domiciliary registrar of mortality. It will thereupon be the duty of the county commissioners to put into that man's hands absolutely undivided and irresponsible power over the life and health and death and burial of any and every person who enters his establishment. Whatever transpires within its walls may be absolutely screened from human inquiry. One man, and he the chief actor, controls every particle of evidence and every avenue of inquiry. He can conceal or falsify any or all of the facts concerning every death, and can even destroy the evidence that a death has occurred. He combines in himself the powers of a police department and a board of health, without the responsibilities of either.

Of course, the law was not intended to eliminate hazard from the practice of assassination; that is one of its unconsidered advantages. Its purpose was to simplify the practice of undertaking. The act authorizes payment by the undertaker of a fee of 50 cents for each burial permit granted by an institutional medico-legal mortality clerk. Every sort of an institution having a medical officer, either resident or visiting, is embraced in the provisions of the act. The convenience of the arrangement is worth 50 cents to any undertaker, and an honest physician who is willing to perform the required service will be amply remunerated by half a dollar. On the payment of 50 cents the honest undertaker may be square with the honest doctor, but in the transactions of doctors and undertakers of another sort—"well, what is the law between friends?"

IS THE PNEUMONIA MORTALITY INCREASING?

If any recent observation in epidemiology has received general assent, it is that the pneumonia mortality has steadily increased during the past 20 years until it now disputes the supremacy of tuberculosis as a cause of death. During the past three or four years the subject has received so much attention in the medical and lay press that the caption to these remarks seems a very much belated inquiry. The mortality tables, if taken at their face value, certainly indicate a tremendous rise in the importance of pneumonia as an agent of death. Health officials who are in the habit of steering by the statistics have accepted the apparent pre-eminence of pneumonia and hailed it as the new "captain of the men of death." Great is pneumonia, but whether greatness has been achieved by or thrust upon pneumonia is yet an open question. Klebs has shown that the mortality charged to pneumonia has increased only at the extremes of life, while in the important period from 10 to 60 years of age the mortality from pneumonia has diminished. As compared with the arch enemy, tuberculosis, whose assaults fall particularly upon the age periods of the highest value, pneumonia cannot inflict equal damage by killing equal numbers, and with this consideration the claim of chieftainship for pneumonia is very distinctly abated.

That pneumonia contributes largely to the mortality of the aged is no news. That acute pulmonary affections are important factors in the mortality of young children is just as well known. But no thoughtful physician can ascribe to one agent of death all the pneumonias either of the aged or the young, much less all the pneumonias of both the aged and the young. The pneumonia account which has furnished so much excitement includes all the pneumonias which have been certified after the careless fashion of the average physician and pigeon-holed under one title by the mortality clerk. A satisfactory analysis of the pneumonia mortality for a period of 10 years cannot be made from the published reports of any city or State in the Union. Even the reports of the twelfth United States census, voluminous as they are, and provided with a classification admitting of good differentiation among the respiratory diseases, give no differential statement of the pneumonia mortality. That the figures should yield a separate account of the group of pulmonary affections usually returned as broncho-pneumonia seems an elementary requisite in mortality accounting, and, fortunately, such statements can be derived from a few published mortality tables. The highest broncho-pneumonia account is that of Boston in the past three years, where broncho-pneumonia constitutes nearly 50 per cent. of the pneumonia mortality. The average derived from half a dozen registration reports shows that 33 per cent. of the mortality charged to pneumonia was returned as broncho-pneumonia. Assuming that the tabulated mortality is in general subject to a discount of 33 per cent., we should not by so large a cut eliminate the broncho-pneumonia, for many physicians employ the word pneumonia as equivalent to broncho-pneumonia, but no physician uses the term broncho-pneumonia when pneumonia is meant.

If it were possible to divide the pneumonia mortality into two parts, of which one would include all the broncho-pneumonias, the other group would still be a conglomerate one, defying analysis. The ignorance and carelessness of certifiers and the incompetence of mortality clerks are not the only factors in the confusion of mortality statistics. The growth and diffusion of medical knowledge have also their influence. The results are apparent in the decline of certain indefinite causes of death. In this connection two sorts of mortality appear to have diminished, namely, convulsions of infants and "senile debility." Very many deaths formerly attributed to convulsions were undoubtedly due to pneumonia, and nowadays the true cause of such deaths is more frequently recognized. At the other end of life we find that the deaths returned as due to senile debility, though somewhat increasing, bears a lesser ratio to the population above 60. The reported pneumonia mortality certainly receives some accessions from this source.

"Capillary bronchitis" had unlimited credit a few years ago. Not all of it goes into the pneumonia account at present. The bronchitis of the census bureau includes returns of capillary bronchitis, but the pneumonia estimates have undoubtedly profited by the passing of this misconception.

There is no doubt that one of the statistical compartments for diseases of the organs of respiration has grown over full of late years, and that the pneumonia returns are in this compartment. But the compartment contains no answer to the question found at the head of this article. Puenmonia may have grown more frequent or more virulent, or both, but the generally accepted view that pneumonia has increased rests upon the ancient basis of many illusions, *"enumerationem simplicem."*

Medical Items.

Sir Henry Thompson died in London on April 19, aged 84.

Carol Norton, perhaps the best known exponent of Mrs. Eddy's tenuous gospel, died recently in Chicago at the age of 34.

Hon. Chauncey Depew, United States senator from New York, delivered the address to the graduates of Baltimore University School of Medicine at its recent commencement.

The Quarantine Hospital at Baltimore has at present a larger number of smallpox patients than at any time in many years. There have been 19 cases of smallpox found in the city during the month.

Dr. Samuel Smiles died in London on April 15. This well-known Scotchman's fame rests upon his popular books, "Self-Help," "Character," "Duty," "Thrift," and a few biographical works. He was a graduate of Edinburgh University in medicine, and practiced for six years. He was over 90 years of age.

The examination for the Cecil Rhodes scholarship at the University of Oxford was held at Johns Hopkins University, 12 candidates competing. Success in this examination means three years at Oxford in a collegiate, post-graduate, or professional course, at the discretion of the student, and an income of $1500 a year for the same period.

The new Medical Laboratory of the University of Pennsylvania is to be formally opened on June 30. The construction has been under way during the past four years, and the university authorities have endeavored to realize in this building the most perfect adaptability to modern medical training. Exclusive of ground and equipment, the building has cost nearly $700,000, and is the first of a contemplated group of buildings which, when completed, will form, it is hoped, the most extensive system of buildings devoted to the teaching of medicine in Europe or America. The finished building is two stories high above a high basement, has a front of 340 feet and a depth of 200 feet. The house contains, besides private-research rooms and a library, large laboratories of pathology, pharmacy and pharmaco-dynamics, two museums, three smaller laboratories for comparative pathology, neuro-pathology and surgical pathology, rooms for photographic work, 20 rooms for subsection teaching, and four lecture-rooms, two having seats for 185 students each and two having seats for 400 students each.

The following poem is inscribed by a grateful patient to Dr. G. W. Kennard, the famous head of the Medico-Theological College of Christ Institution, Ensor street, Baltimore. The young authoress, who was blind from infancy, is now able to see, though she does not exercise her new-found power upon material objects:

What Would You Do Without Him?

Jesus is more to me than all the richest
  Fairest gifts on earth could ever be;
But the more I find Him precious,
  And the more I find Him true,
The more I long for you to find
  What He can do for you.

You need not do without Him,
  For He is good and kind;
He died on the cross to save you,
  And suffered for all mankind.
The Lord is good and gracious,
  He opens the eyes of the blind,
And every wounded spirit
  In Christ relief can find.

There is many a thoughtless mother
  Alive in this cold world
Who never grasps the idea
  Of a poor, sightless girl!
Oh! They think that loss of vision
  Has taken out their light;
But to lose the love of mother
  Is as bad as loss of sight.

Those who see earth's beauties
  Are, of course, ahead of me,
But my spirit eyes the Saviour
  Do so very often see!
How could I do without Him?
  He is all the world to me;
Yes, He makes me so happy,
  And I know I am going to see!

I am over five and twenty,
  And at birth I had no sight—
Over twenty-three years in darkness,
  Knowing not the day from night.
Given up by many doctors;
  I had many a hearty cry,
Driven most to desperation,
  When I heard of old C. I.

I came to that place of healing
  Where God's word was preached,
Where were fervent prayers and singing,
  Where they heal all flesh's affliction,
And those who are bowed in sorrow—
  They will try the same for you.

In C. I., a place of wonder,
  A place you can't forget,
On the twelfth of October, ninety-four,
  My first footsteps I set.
I was in total darkness,
  And would have been so yet
But for treatment, faith, and prayers
  I did every morning get.

Oh! I thank the blessed Jesus
  That with those kind friends I met.
Yes, the doctors and the rubbers,
  Just the best I ever met.
Now I'm seeing, I'm so happy!
  Jesus gave the Gospel plain—
I saw horses, birds, and chickens,
  But first of all I saw a MAN.

The 106th annual meeting of the Medical and Chirurgical Faculty was held in Baltimore on April 26, 27 and 28. At the opening session on Tuesday evening the new constitution was adopted, with a few slight amendments. This change brings us into conformity with the plan of organization of the American Medical Association. The first meeting of the House of Delegates was held on Wednesday morning at the Stafford. The program was as follows:

Wednesday, April 27, 1904—Morning Clinics. Johns Hopkins Hospital: 9-10 A. M.—Operative Clinic in Gynecology, Dr. Howard A. Kelly. 10-11 A. M.—Surgical Clinic, Dr. Wm. S. Halsted. College of Physicians and Surgeons: 12-1.30 P. M.—Surgical Clinic, Dr. John W. Chambers.

Afternoon Session, 2.30 P. M.—Hall of the Faculty.—1. "Antitoxic Serums in the Treatment of Disease," Dr. Harry T. Marshall; 2. "What Diphtheria Antitoxin Has Accomplished and How It Should Be Used," Dr. W. T. Watson; 3. "The Value of Tetanus Antitoxin," Dr. Brice W. Goldsborough; 4. "The Clinical Value of Pneumotoxin, Typhoid Vaccine, etc.," Dr. Thos. B. Futcher; 5. "Dunbar's Antitoxin for Hay Fever," Dr. W. F. Lockwood. Discussion to be opened by Dr. Wm. H. Welch.

Wednesday Evening Session, 8 P. M.—Held at McCoy Hall, Johns Hopkins University.—1. Annual Address by the President: "The Importance of the Study of the History of Medicine," Dr. Eugene F. Cordell; 2. "The Röntgen Rays and Radium," Prof. R. W. Wood, Johns Hopkins University; 3. "The Diagnostic Value of the Röntgen Ray," Dr. F. H. Baetjer; 4. "The Therapeutic Value of the Röntgen Ray, Finsen Light and Radium," Dr. T. C. Gilchrist; 5. "The Medico-Legal Importance of Röntgen Rays," Dr. H. F. Cassidy.

Thursday, April 28—Morning Clinic.—University of Maryland: 9-10 A. M.—Medical Clinic, Drs. J. M. Craighill and J. C. Hemmeter. 10-10.30 A. M.—Surgical Clinic, Dr. Randolph Winslow. 10.30-11 A. M.—An Abdominal Section, Dr. Thos. A. Ashby. Baltimore Medical College: 12-12.30 P. M.—An Operation for Hemorrhoids, Dr. S. T. Earle. 12.30-1 P. M.—Conditions Simulating Appendicitis, Dr. Robt. W. Johnson. 1-1.30 P. M.—Cases Illustrating the Best Method of Surgically Treating Fractured Patellae, Dr. John D. Blake.

Afternoon Session, 2.30 P. M.—Hall of the Faculty.—1. "Pylorectomy for Cancer of Stomach" (Exhibition of Patient), Dr. J. H. Branham; 2. "A Case of Chronic Pancreatitis—Operation—Recovery" (Exhibition of Patient), Drs. J. W. Chambers and Julius Friedenwald; 3. "Hour-Glass Contraction of Stomach" (Exhibition of Specimens), Dr. José L. Hirsh.

Thursday Evening Session, 8 P. M.—Held at McCoy Hall, Johns Hopkins University.—Annual Oration: "The More Remote Consequences of Infected Bile," Dr. John B. Deaver; Original Poem: "The Foes of the Household," Dr. C. C. Bombaugh.

The nominations of the House of Delegates were all elected by the Faculty. The officers for the coming year are as follows:

President, Dr. E. N. Brush; first vice-president, Dr. Samuel T. Earle; second vice-president, Dr. C. R. Miller of Hagerstown; third vice-president, Dr. J. A. Johnson of Easton; secretary, Dr. John Rührah; treasurer, Dr. Thomas A. Ashby.

New member of the board of trustees, Dr. L. McLane Tiffany.

Committee on Library—Drs. George J. Preston, William Osler, Stewart Paton, Charles O'Donovan, and J. W. Williams.

Committee on Scientific Work—Drs. Jeffries Buck, John Rührah, and H. O. Reik.

Committee on Public Policy and Legislation—Drs. Wm. H. Welch, Thomas S. Latimer, and E. J. Dirickson of Worcester county.

Delegates to the Convention of the American Medical Association—Drs. Wm. Osler and Clotworthy Birnie, and alternates, Drs. Samuel T. Earle and Charles M. Ellis.

Special Committee on Legislation of the American Medical Association—Dr. S. T. Earle.

Memoir Committee—Drs. E. F. Cordell, Joseph T. Smith, F. D. Sanger, H. H. Young, Philip Briscoe, and E. L. Whitney.

Chairman of the Board of Trustees and of Library Committee—Drs. L. Tiffany and Preston, respectively.

Committee on Conference with the Pharmaceutical Association—Drs. Charles H. Riley, W. F. Lockwood, and J. F. Crouch.

Council—Drs. William Osler, T. S. Latimer, Robert Johnson, Randolph Winslow, H. O. Reik, Charles M. Ellis, C. W. Wainwright, Clotworthy Birnie, C. R. Miller, and Thomas H. Brayshaw.

Members of the Examining Board—Dr. Herbert Harlan of Baltimore and Dr. Franklin B. Smith of Frederick.

The annual supper was held at the Stafford on Thursday evening. The attendance was unusually large and gave every indication of increased interest in professional organization.

MARYLAND
MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 6 BALTIMORE, JUNE, 1904 Whole No. 1033

THE PROPHYLAXIS OF SUMMER DIARRHEA

By J. H. Mason Knox, Jr., Ph.D., M.D.,

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Woman's Medical College of Baltimore.

So MUCH has been written during recent years on the prevention of summer diarrhea that there seems little that can be added to the subject. The theories of the origin of this affection, as well as the suggestions to prevent its recurrence, have been many and various. However, as the knowledge of any specific ailment becomes more exact and definite the methods of prophylaxis and treatment should become more precise and successful. This has been notably the case in the conflict with tuberculosis, typhoid fever, yellow fever, and a number of other diseases in which it has been found that certain procedures adapted to the specific disease are more efficacious than a host of general measures.

The discovery made a few years ago that a large number, at least of the typical cases of summer diarrhea, are produced by infection of the alimentary canal with the Bacillus dysenteriae, Shiga has added much interest to the study of these dangerous disorders among infants, and has led to the hope that the effort to stamp out this widespread yearly epidemic may be more intelligently, and hence more successfully, directed.

The association of the Shiga bacillus with summer diarrhea led naturally to the attempt to produce a curative serum. It was found possible to immunize animals (horses) against many times the lethal dose of the organism, and last summer at the Thomas Wilson Sanitarium and elsewhere a number of cases were injected with this immune horse serum, prepared under Dr. Flexner's direction at the Mulford Vaccine Farm.

The results obtained will be reported in more detail later. They were in the main disappointing, although the specific action of the serum seemed definite in several instances. It was demonstrated that the injection of the antidysentery serum under proper precautions is an absolutely harmless procedure, and it may be that hereafter a serum highly protective and curative for infants may be procured.

Work along these lines is progressing. Thus far, however, it must be acknowledged that the prevention of the disease by prophylactic measures rather than its cure by serum offers the most hopeful field in the study of summer diarrhea.

With these facts in mind it may not be without interest to analyze a series of cases treated last summer at the Thomas Wilson Sanitarium with reference to some of the factors which are thought to play an important part in the etiology of the disease. One hundred and ten cases form the basis of this report. They represent seriatim the cases of summer diarrhea treated at the Sanitarium during the season. Cases are excluded in which malnutrition or disease of other viscera than the intestinal tract played the most prominent part in the child's condition. In 43 of these instances the dysentery bacillus was found by Dr. Bassett in the dejecta. These 43 cases included all the clinical varieties of summer diarrhea, both those in which the symptoms are due to an acute toxemia, called gastro-enteritis, dyspetic or fermental diarrhea, and those in which there is evidence of a destructive lesion of the intestine, usually designated as ileo-colitis.

Realizing that there is no sharp distinction to be drawn between these two clinical divisions, of the cases here reported in our series, 87 cases belonged to the "toxic group" and 23 should more properly be considered examples of ileo-colitis.

It was thought that with sufficient laboratory facilities the dysentery organism could have been isolated in practically all of the 110 cases of the series.

It is to be emphasized that these patients came to the Sanitarium from widely-separated parts of the city of Baltimore, and that at the time of admission they were already suffering from intestinal disorder. We are not dealing, therefore, with an institutional epidemic, and an analysis of these cases represents fairly well the conditions pertaining in the families of the laboring class in our city.

The principal data can perhaps most easily be understood in tabulated form.

Age and Season.—The age of the patients in periods of six months, together with the fortnight of the summer in which they were admitted, is shown in the following table:

TABLE I.

		June		July		August	
Age.	Total.	1-15.	15-30.	1-15.	15-31.	1-15.	15-31.
0-6 months..	38	..	5	17	9	3	4
6-12 months..	45	1	3	15	18	8	..
12-18 months..	16	..	4	6	3	3	..
18-24 months..	5	..	..	1	4	..	..
24 + months..	6	..	2	4	..	..	..
Total.......	110	1	14	43	34	14	4

It is to be noticed that 83 of the 110 cases, or 75 per cent., were under a year old; after this time the number rapidly diminishes, and after two years the trouble rarely occurs. The oldest child in our series was three years of age.

In regard to the season in which the disease is most likely to break out, it should be recalled that last summer was exceptionally cool, and that the outbreak of diarrheal disorders among infants was therefore delayed. However, the increase in the number of cases through June to a maximum early in July, and then a gradual fall through the remainder of the summer, as shown in the table, agree with the observations of many years, and place this series, in which the dysentery bacillus is a probable causal factor, in line in this particular with clinical experience with summer diarrhea in general.

A feature of the disease not brought out in the table, but which was marked in our series, and has been generally noted for many years, is the sudden increase in the number of cases after even a short period of excessive heat. (See article by Park and Holt, *Archives of Pediatrics*, XX, 1903, p. 906.)

Diet and Surroundings.—The diet and the surroundings of our patients at their homes at the time of their illness is indicated in a second table. This data was obtained from the statements of each patient's mother at the Sanitarium, confirmed by her conduct while under observation, and by the reports of the town nurses employed by the Sanitarium to visit the children of the poor in the city. The following blank is filled out with every history, so that a fairly complete record of the condition amid which the child lives is secured:

No. . . . . Ward. . . . .

THE THOMAS WILSON SANITARIUM FOR SICK CHILDREN.

Name. . . . . Address. . . . .
Age. . . . . Admitted. . . . .
Diagnosis . . . .
Result. . . . .
Family History: Mother. F.
B. S.
Number living in room with baby, and size of room.
General household hygiene.
Other diarrheal cases in household.

Past History:
Manner of birth.
Previous diseases.
Number and character of stools before present illness.
Nourishment:
A. Breast-fed exclusively.
a. Until what age.
b. Intervals between feeding.
c. Length of feedings.
B. Mixed feedings, breast + ?
a. At what age begun.
b. Intervals between feedings.

- *C.* Artificial feeding.
  - *a.* Milk, whole.
  - *b.* Diluted with?
  - *c.* Quantity per feeding.
  - *d.* Intervals between feedings.
  - *e.* Source of milk supply (name and address of dealer).
  - *f.* Refrigeration at home.
  - *g.* Pasteurized, etc.
- *D.* Proprietary and other foods.
- *E.* 1. Lime water, soda or potash solutions.
  - 2. Can sugar. Milk sugar.
- *F.* Water given *with* nourishment, boiled, unboiled.
  - Water given *between* feedings, boiled, unboiled.

A word or two in explanation of Table II may be helpful. In the breast-fed cases no other milk or fluid other than water was given. Three of them were occasionally given dry bread or a cracker in addition to the breast. By "fair" cow's milk is meant obtained from milk wagons or dairies. "Store" milk is the milk purchased at the small grocery stores and elsewhere. This milk is usually cheaper, particularly rich in bacteria, and often adulterated. (See articles by the writer and Bassett, MARYLAND MEDICAL JOURNAL, Vol. XV, 1902, p. 240, and Schorer, *ibid.,* Vol. XVI, 1903, p. 214.)

In most homes "heating the milk" means "bringing it to a boil" or "scalding" it in an open vessel on the stove. Definite sterilization or Pasteurization was not practiced. The amount of care the patient received and the conditions of life at the home, amount of fresh air and sunlight are grouped together under the caption "Hygiene." The cases were then roughly divided into three classes, according as in our judgment the hygienic surroundings seemed good, fair or bad.

In no instance were these conditions ideal. The unboiled water referred to in the table comes in nearly every case directly from the city mains. The question of refrigeration explains itself.

TABLE II.

		—Hygiene.—			—Water.—			Refrigeration.	
	Total.	Good.	Fair.	Bad.	Boiled.	Unboiled.	Not given.	Ice.	No ice.
Breast milk	11	4	4	3	..	7	4	1	1
Cow's milk, "fair," heated	23	9	11	3	4	17	2	13	7
Cow's milk, "fair," raw	9	2	5	2	..	7	2	1	5
Cow's milk, "store," heated	28	1	6	11	5	8	5	4	13
Cow's milk, "store," raw	8	1	4	2	..	7	1	..	7
Condensed milk	29	9	11	9	6	21	2	1	8
Table diet	12	3	6	3	..	12	..	..	7
Total	110	30	47	33	15	79	16	20	57

There are several facts brought out in this table which differ somewhat from the generally accepted views concerning the method of infection of summer diarrhea.

The number of breast-fed children suffering from intestinal disorders, 10 per cent. of the whole number,* is larger than is usually given. Moreover, it is surprising that the infants fed on milk of an inferior quality purchased at the small stores should not far outnumber those given fairly good milk or condensed milk. In our series they were nearly equal, being 32, 36, and 29, respectively.

This is in part explained by the fact that a larger proportion of the mothers who were sufficiently intelligent to supply milk of fair quality to their children were also more willing to avail themselves of the benefits of a distant sanitarium when their babies became ill than were the less intelligent who used the "store" milk.

A surprisingly large number of the mothers heated, that is, scalded, the milk before giving it to their children.

The table gives no indication of the great irregularity of feeding. as well as of the lack of any relationship between the strength of the milk mixtures and the quantity given at a time, and the age and size of the baby. These dietary misdemeanors are constantly committed in the homes of the poor, and often set up digestive disturbances and lower the resistance of the child to subsequent infection. That the number of our cases who lived under fair hygienic surroundings is large is to be also partly accounted for by the fact that a considerable proportion of our patients belonged to the more intelligent of the working classes.

Notwithstanding these facts, the many babies who have been admitted to the Sanitarium from moderately-cleanly homes and who had received boiled or scalded milk has been of especial interest to us for several years.

It will be remembered that the cases occur simultaneously in the summer in infants who obtain their milk from absolutely separated herds, so that there can be no question of a commonly contaminated milk supply. Moreover, the number of breast-fed babies and the 29 cases given condensed milk in our series are difficult to account for on the theory that the infection is primarily one of the milk supply.

A careful examination of our histories shows that there is very rarely a previously-ill diarrheal case in the family. There were but five such in 110 cases. The usual account of the mother is that the baby, apparently well or possibly fretful for a few days, was suddenly seized with vomiting, followed by diarrhea, often associated with fever. The older members of the family remain well.

A study of the epidemiology as well as the clinical features of the affection suggests that the disease is brought about by some *common carrier*. It is certainly not carried to any great extent through the air, as it does not spread readily in hospitals and in crowded districts from patient to patient when simple precautions are taken. For some time we have had our attention directed to the *water* given the infants either with or between their nourishments as a possible means of conveying the disease. If it is accepted that many of these cases are produced by the dysentery bacillus, there are certain biological facts that would tend to support this hypothesis. The dysentery bacillus belongs to the same group of bacteria as the typhoid and colon bacilli. These find entrance to the body chiefly through drinking water. It has been shown that all these organisms may live for indefinite periods in water, and may even survive the ice of winter, and that they multiply rapidly in warm weather.

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* In a series of 62 cases of infection with the dysentery bacillus, recently reported, 14, or 22 per cent., were breast-fed. (Le Fetra and Howland, *Arch. of Pediatrics*, XXI, 1904, page 161.

Thus far the Shiga bacillus has not been certainly isolated from drinking water. This, however, is rarely done in the case of the typhoid bacillus, the demonstration of the colon bacillus in water being taken as an indication of the probability of its infection by the typhoid bacillus. May it not indicate also the possibility of its contamination by the dysentery bacillus, particularly in warm weather when there is a widespread epidemic in progress? With this possibility in mind, the 110 cases in our series were investigated to discover in how great a proportion *all* the water given the babies had been boiled and the bacteria therefore destroyed. The results of this study are seen in the second portion of the table. Thus of the 110 cases, in 15, or 13.6 per cent., the mothers asserted that all the water given the child had been boiled; in 16 cases it was claimed that no water was given other than with the milk, but in three of these instances the milk itself was fed raw; so that there are but 13 babies, or 12.8 per cent., who, according to the statement of their mothers, received no unboiled water. On the other hand, there was testimony that 79 infants, or 71.8 *per cent. of the whole number,* were given *unboiled water* from the city mains either with or between the regular feedings. It is especially noteworthy that unboiled water was given to 7 of the 11 breast-fed cases, and to 21 of the 29 babies fed on condensed milk. In these two groups infection through the milk supply can be practically disregarded. Of the 15 babies stated to receive only boiled water, and of the 16 infants to whom no water was given, further investigation shows that eight lived in very bad surroundings, and that eight were given various articles from the table besides the regular diet. These facts as far as they go tend to substantiate the hypothesis that the yearly outbreak of diarrheal diseases prevalent among infants may be in part water-borne. The infection of this common carrier would explain the simultaneous outbreak of the disorder in distant parts of a city.

It may be found in the future that the dysentery bacillus is a constant inhabitant of the intestinal tract, but very painstaking and repeated examination of normal stools have thus far failed to demonstrate it. Sporadic cases of intestinal disorders due to the same organism have been shown to occur among children and adults from time to time through the winter. These would suffice to perpetuate the life of the bacillus.

A certain number of the diarrheal diseases in infants are unquestionably due to other organisms, notably the streptococcus pyogenes. The relationship, if any, of water to these cases is still unknown. It must be recognized that there are other modes of infection. Several cases have come under observation where direct contact with fomites or insects, notably the housefly, seems to have carried the disease.

Data concerning the refrigeration in the homes of our patients were obtained in 77 instances. In 20 of these it was claimed that ice was taken regularly throughout the summer. This fact further confirms the statement that many of our cases come from the better classes among the poor.

The results of the treatment in the series of cases have been arranged in the following tables. No marked difference in susceptibility or resistance to the infection was noticed in the different races which came under observation. There were seven colored infants in the series:

TABLE III.

		Result.			
Age.	Total.	Well.	Improved.	Unimproved.	Died.
0-6 months......	38	18	12	1	7
6-12 months......	45	13	20	1	11
12-18 months......	16	12	3	..	1
18-24 months......	5	2	3	..	..
24 + months......	6	4	2	..	..
Total...........	110	49	40	2	19

The figures indicate the remarkable limitation of the mortality from the disease to the first year of life, the death-rate in the first six months being 18 per cent., in the second 24 per cent., and in the third but one-half per cent. in our series, while no fatalities occurred after 18 months.

It would appear, then, in early infancy, when the digestion is so often disturbed by nutriment ill-suited in quality and quantity to the delicate alimentary tract, that the child is most susceptible to diarrheal disorders during the summer; that these illnesses usually result favorably in children over a year and a-half, but are attended throughout the first year by a considerable mortality.

The results in reference to the diet have also been tabulated:

TABLE IV.

		Result.			
	Total.	Well.	Improved.	Unimproved.	Died.
Breast milk..................	11	4	6	..	1
Cow's milk, "fair," heated....	23	12	9	1	1
Cow's milk, "fair," raw......	9	2	2	..	5
Cow's milk, "store," heated...	18	12	4	..	2
Cow's milk, "store," raw.....	8	4	3	..	1
Condensed milk.............	29	7	12	1	9
Table diet.................	12	8	4	..	..
Total....................	110	49	40	2	19

The cases in the individual groups, particularly those receiving raw milk, were too few to admit of any general deduction. However, in taking all the infants together who received cow's milk, both of fair and bad quality, either heated or raw, as compared with those fed on condensed milk, certain suggestive data are obtained.

There were in the series of 110 cases 58 infants who were fed on cow's milk, usually improperly modified. Of these, 30 recovered, 18 improved, 1 was discharged unimproved, and 9 died, a mortality of 10.5 per cent.—*i. e.,* 82.7 per cent. of the number were bettered and 17.2 per cent. did badly; whereas of the 29 cases brought up exclusively on condensed milk, 19, or 65.5 per cent., were bettered, and 10, or 34.4 per cent., became worse, the mortality being 31 per cent. This would emphasize the truth, long known, that although condensed milk and proprietary foods do not of themselves directly bring on these specific diarrheal disorders—in fact, the babies so nourished are less liable to contract them—that when infection through some other means takes place, the child reared on condensed milk has less resisting power.

The prognosis in the breast-fed infants is especially good, as it is in children old enough to take table diet.

A study of these cases would tend to lay stress on the following points:

1. There is no satisfactory substitute for mother's milk, particularly for the children of the poor.

2. When artificial feeding is necessary it is important that there should be some modification of the strength and quantity of the milk suitable to the age of the infant, that indigestion may be prevented, which implies a lowered resistance to all infections, particularly those through the alimentary tract.

3. There is reason to believe that unboiled water may play a part in the spread of summer diarrheas, and it is desirable that all water given to an infant in hot weather, either with or between its feedings, be boiled.

4. A pure milk should be accessible at a low price to the poor of all large communities. This milk should be sterilized during the summer months.

5. A diet consisting exclusively of condensed milk prevents the proper development of the child and lessens its resistance to untoward influences.

6. Life amid unhygienic surroundings has a marked deleterious effect upon the health of an infant.

A SPORADIC CASE OF CEREBRO-SPINAL MENINGITIS, WITH A DESCRIPTION OF THE PATHOLOGICAL AND BACTERIOLOGICAL FINDINGS.

By Robert Reuling, M.D.,
Baltimore.

C. W., a negro, was admitted to the Maryland General Hospital in December, 1903. He complained of pain in his head and neck, and extreme weakness. He was 43 years old, and a laborer. Family history unimportant. No history of tuberculosis or a neurosis among his antecedents. He had always enjoyed very good health, and did hard work as a day laborer, but was never of robust constitution. About 10 years ago he had what he called rheumatism, which confined him in bed for three days with pains in the lower extremities and back. No swelling of the joints was noted, nor was the tenderness more acute about the joints. He had used alcohol, generally whiskey, since early youth, always in moderation; only drunk once that he remembers. No history of syphilis or its secondary manifestations; denies gonorrhea.

On November 18, 1903, the patient was seen by one of the students in the graduating class of the Baltimore Medical College. He then complained of severe pains in the head, especially in the occipital region, but the entire head ached. On any attempt at moving his head, and, for that matter, active or passive motion of any part of the body, caused the patient to cry out with pain, and he would generally place the right hand over the occiput. On the 18th the neck muscles seemed slightly stiff. On questioning, he says he was first taken ill on the 16th of November. He had been engaged in hauling, and the weather was cold and damp. Towards midday he felt cold and had slight chilly "creeps." About the same time his limbs ached, and he noticed a feeling of extreme weakness, with a dull pain over the lower portion of his back. By evening his head began to ache, and he noticed almost at the very beginning that the head pains had a tendency to come and go—especially that every now and then a severe pain would suddenly "shoot" through his head. On reaching home on the evening of the 16th he had a sudden severe chill, causing him to shake all over and the teeth to chatter. This was followed by marked sweating and extreme weakness, and fever was now apparent. No history of coryza at this time or previous to illness, nor of herpes labialis. No nausea or vomiting. On the 17th he remained in bed. The head pains were more acute and radiated into the neck and over the right shoulder. He had another severe rigor, followed by sweat and fever. On the 18th when seen by the student he had another chill, and Mr. Bier found his temperature to be 102°. He gave the patient five grains of quinine and a purgative. The blood, unfortunately, was not then examined. On the 19th his general condition seemed slightly improved. No chill occurred. His morning temperature was 102.5°. On this day the extreme rigidity of his neck muscles was first noticed. His head was held in a rigid position, with the chin over the left shoulder. On any attempt to place the head straight he would cry with pain. The head remained in this rigid position until death. On raising his extremities he cried with pain or his facial expression showed he was suffering. He had severe pains between the shoulders. His bowels, previously constipated, had moved. The abdomen seemed to be drawn in and slightly rigid, but not tender. The lungs and heart were normal, excepting that the heart-action was slightly irregular and rapid. The spleen was slightly enlarged for about four days, but could not be palpated while he was in the hospital. On the morning of the 20th of November complete paralysis of the left lower extremity was made out, and the case now seemed to give the young man in charge more concern. The temperature remained between 102° and 103.5°. All the muscles of the left lower extremity were paralyzed, but he could move the toes a little. The sensorium was slightly clouded, and patient seemed very dull, rarely speaking, and answering questions slowly. Some questions were answered so very incorrectly that it was evident his memory for recent incidents was clouded. On November 22 the bladder and rectum were found paralyzed, and the right lower extremity was paretic, so that only very weak muscular response was evident. He was brought to the hospital on this day evidently a very ill man.

December 2, 1903, at the request of Dr. Charles Hill, I saw the patient in the hospital ward and made the following notes:

The patient, a colored man, apparently between 40 and 45 years old, is lying on his left side in bed; his eyes are closed and he appears asleep. When spoken to his lids open slightly, but his head remains rigidly turned over the left shoulder. He answers questions with a very feeble voice, and only a few words are really audible, the movements of the tongue being evidently affected. Touching his head, even gently, causes an expression of pain. The left sterno-cleido-mastoid muscle is sharply contracted, and the angle of the mouth drawn to the left side, showing partial paralysis of the left facial nerve. The eyes seem normal, excepting that both pupils react to light sluggishly. The pupils are equal; no strabismus. The most superficial percussion of the cervical spine causes pain, this being especially acute from the fourth to about the eighth cervical vertebra. Below this the spine is less sensitive until one reaches the mid-dorsal region, when acute pain is again elicited. Every few minutes, even though the patient be entirely undisturbed and quiet, a sudden expression of pain will come over his face, and he makes a feeble attempt to put the right hand to his head, but appears too weak to do so. No scars of herpes about the face or body. At no time was there the slightest evidence of an eruption on the patient's body. The tongue can only be moved a trifle, the tip coming just to the edge of his teeth. It is in the median line and shows no atrophy.

Examination of the lungs negative, excepting for a few moist rales over the left base posteriorly.

Heart-action is very rapid and remarkable for its irregularity—in fact, several beats at a time are lost. The first sound is very feeble. No murmur. The radial arteries are soft, and the pulse easily compressed.

The abdomen is markedly retracted, and the iliac crests very prominent. There is no abdominal tenderness, although the abdominal muscles are rigid. The examination of the abdomen in general negative.

The spleen cannot be palpated, and percussion fails to show enlargement. The left lower extremity is completely paralyzed and is semiflexed at the knee. Its muscles are in general wasted, and a difference of 2.5 to 3 cm. is made out in the circumference of the right and left lower extremities. The muscular atrophy is most marked in the thigh muscles. Very marked fibrillary tremors and muscle-play (myoidema) is seen in the muscles of both lower extremities, especially in those of the left. Patellar reflex abolished on left side, feeble on the right. Strange to say, a complete anesthesia to touch, pain, and temperature affects the entire lower left extremity, while sensation is absolutely normal in the right extremity. A pin can be stuck in its entire length in the left thigh without eliciting the slightest reaction, whereas he feels the contact of a camel's-hair brush over the right thigh. No Babinsky reflex found. Kernig's sign not tried. Over the sacral region about 1 cm. to the left of the spine a deep bedsore is seen, larger than a dollar and round in outline. It is ill-smelling and has considerable discharge. Another sore is beginning to form over the left trochanter. Both urine and feces are passed involuntarily by the patient.

The upper extremities are much wasted, but no true muscular atrophy exists. Reflexes about normal. Muscles of deglutition evidently affected, and for the last three days he can swallow only liquid food, and this with difficulty on account of regurgitation at times through the nose.

The following figures are of interest to show the remarkable want of relationship between the temperature and pulse, the irregularity of the pulse being evidently due to disturbance in the functions of the vagus nerve:

Temperature.....	98	97	100	98	101	99.4	98	98	99
Pulse............	104	110	120	96	120	130	132	110	130

Unfortunately, the patient died the following day, and was found dead when a spinal puncture had been decided on. The cause of death was toxemia, with cardiac paralysis.

The post-mortem description will be limited to the findings in the central nervous system and the bacteriological report.

Autopsy 36 hours after death. Rigor mortis well marked. The following measurements were made of the two lower extremities to show more accurately the muscular atrophy in the left one, which was the first member to be paralyzed:

Right lower extremity 18 cm. from anterior iliac spine; circumference of thigh 38 cm.

Left lower extremity 18 cm. from anterior iliac spine; circumference of thigh 35 cm.

Right leg 13 cm. below lower border of the patella, 25.5 cm.

Left leg 13 cm. below lower border of the patella, 24 cm.

The skull was of about ordinary thickness. The brain with dura attached weighed 1370 grams.

Although the upper brain surface on removing the calvarium appeared almost normal, excepting an intense injection of the cortical vessels, on lifting the organ a circumscribed path of cloudy dura about the size of a quarter lies on the left occipital cortex. This is found to be a collection of pus under the membranes. On the lower occipital surface a beautiful example of purulent infiltration closely following the course of the arteries in the brain cortex is seen, the pus being in the lymphatics, so that the injected blood-vessel is sharply outlined by its accompanying lymphatic vessel distended with pus. The pia is also cloudy over the entire lower occipital region, and about the base near the entrance of the medulla is it distended with pus. Only about one-half dram of pus is obtained on opening the pia; all the remaining purulent matter is confined to the lymph-vessels. This purulent infiltration of lymphatics is so intense about the base of the brain that one would at first expect to find more free pus, but the lymph-vessels are here closely connected, and a general cloudy purulent condition is simulated. The numerous nerves which emerge from the base and from the medulla show a purulent infiltration about their sheaths for a short distance after emerging, and a light flocculent mass of fibrin is seen especially about the sixth and seventh nerves, less so the eighth. The optic nerves were free from exudate except for a few extremely delicate threads of fibrin about the optic commissure. Two punctiform hemorrhages were found in the dura in the left occipital lobe. The frontal lobes were practically normal. Even the injected condition of the cortical vessels was far less marked than in the occipital lobes. The medulla and spinal cord were now removed. The cord shows a very intense inflammation of its dorsal surface. This is especially true from the tenth dorsal to the second lumbar segment and from the medulla to the sixth cervical segment. The anterior surface is far less inflamed. It is only about the medulla and uppermost segment of the cord that pus is visible, but the microscopic examination showed an intense purulent infiltration in the regions where the inflammation was marked. A small subdural hemorrhage is seen in the eleventh dorsal segment about the size of a small lima bean, and this seems to encroach slightly on the cord substance. A much smaller hemorrhage, the size of a pea, lies on the left lumbar region. Practically no fluid exists in the subdural space nor in the central canal, as an experimental tap made after death was dry.

Microscopic Examination of the Brain and Spinal Cord.—Through the kindness of Drs. Paton and Brush I had the privilige of using the laboratory of the Sheppard and Enoch Pratt Hospital for examining these specimens.

The pieces of tissue were hardened in 10 per cent. formalin. Sections of the upper medulla stained by the eosin hemotoxylin stain showed the following changes:

The dorsal portion of the cord shows an intense purulent infiltration of the pia which encroaches at times on the lateral surface, but only a few pus-cells are, as a rule, seen in the anterior portions. The pus-cells are mostly made up of polymorphonuclear leucocytes in various stages of degeneration, and a few lymphocytes, and also a few "Mast-zellen." Not a single eosinophilic leucocyte could be found, and their absence is mentioned by Councilman. Several areas of necrosis of this cellular infiltration are seen with fine nuclear detritis, showing that the process had existed for some time. No evidence of fibrin formation can be made out, however, nor are any fibrino-blasts apparent. The cord substance shows only a moderate infiltration by the pus-cells. In some sections, however, a blood-vessel could be seen whose accompanying lymphatic was filled with pus-cells, and these reached to the center of the cord. An occasional pus-cell is found in the central canal, but they are conspicuous by their absence here. Although cellular infiltration of the cord substance has been noted, one is struck by numerous round bodies closely simulating cells which take up a deep bluish-black stain. The bodies were found in almost all the cord sections where the eosin hemotoxylin stain was used, but were by far more abundant where the meningeal inflammation was most intense. It is also very striking that these bodies lie, as a rule, close to the periphery of the cord, and are never found collected in a distinct mass. Though they lie in close enough proximity to one another to form a distinct zone, one finds an occasional body in the central portions of the white substance. They are almost invariably considerably larger than a polymorphonuclear leucocyte—in fact, are mostly about the size of cells seen in a small-celled carcinoma. It took me some time to convince myself they were not cells. But although one at times sees an apparent narrow rim of protoplasm around what might have been a large deeply-stained nucleus, still this appearance is a refraction artefact and can be eliminated. No nuclear figures can be made out in them, and one would expect in a nucleus of this size, if made out, nuclear fibers and the presence of a nucleolus, etc. They appear to be, in fact, nothing more or less but particles of a substance derived from the degenerating myelin sheath of the nerve fibers, this substance taking on the intense blue of the hemotoxylin stain. It is well known that the myelin sheath of the nerves contains a substance apparently related to fat—at least one of the numerous fat derivatives—and this would account for the fact that the particles are more abundant near the inflammatory reaction. That a marked degeneration of myelin has taken place in this spinal cord is evident from a section stained by the Marchi osmic-acid stain, which shows a diffuse degeneration throughout the white substance, especially in the nerve fibers near the periphery of the cord. With this stain numerous black spots are found resembling the above in distribution and morphology. If the reader will refer to the excellent article of Councilman on cerebro-spinal meningitis, he will find that this author has also been struck by these peculiar bodies just referred to, and he evidently regards them as cells, an opinion with which I cannot agree.

A description of one section of the cord—and, for that matter, that of a section taken from the inflamed brain cortex—will be sufficient to describe them all. In fact, the process throughout in this case shows this a typical example of meningitis.

Bacteriological Examination.—Cultures were taken from the pus from the base of the brain and from the subdural space in the spinal cord. A pure culture of the diplococcus of Jäger-Weichselbaum was obtained on both agar-agar and on blood serum. The growth is, however, only luxuriant on the blood serum, and in 24 hours consists of pearly-white colonies scattered over the surface. On the agar only three colonies formed on one tube and two on a second; the third remained sterile. Not a single contaminating colony was found.

The organism is a typical biscuit-shaped diplococcus, resembling in every respect, as far as its morphology goes, the gonococcus of Neisser; in fact in this respect no two organisms could be more alike. It is stained by the ordinary aniline dyes. It also stains by Gram. From the fact that it grows fairly readily on various culture media it differs from the gonococcus, but this is about the only tangible difference in the two organisms.

In this case several smears of pus were made, but only two cells in the many fields examined were found to contain the organism. In these it appeared as described by Weichselbaum, Jäger, and Councilman—namely, it was abundant throughout the cell substance and at times closely packed about the nucleus.

This case, therefore, seems of interest in that it turned out to be a typical example of cerebro-spinal meningitis occurring, as it did, when no other cases had been reported at the Health Department. In the absence of an epidemic it is therefore a sporadic case. Strange to say, in Councilman's monograph of this disease he mentions the fact that in not a single sporadic case of cerebro-spinal meningitis had the diplococcus been isolated, and as my searching through the literature on the subject from the publication of Councilman's article has failed to show that this statement is at present incorrect, the case seems more interesting in that a pure growth of the etiological organism was isolated. It may here be well to make the plea that in the future the name of spotted fever be no more used in connection with this disease, for although it appears that skin eruptions were a marked feature in the early epidemics of this disease, its character in this respect seems to have changed sufficiently to make this term confusing in our present state of knowledge. In practically none of the cases appearing in epidemics during the last 50 years do skin eruptions form an important part of the clinical picture, with the exception of the occurrence of herpes.

Current Literature.

REVIEW IN MEDICINE.

Under the Supervision of Thomas R. Brown, M.D., Baltimore.

SLEEPING SICKNESS.

Although sleeping sickness, fortunately, is a disease practically unknown to America, yet in its clinical symptoms and its etiological findings it is so interesting that it seems worth while to discuss some of the recent work on this subject. A very interesting special article on the etiology of sleeping sickness is to be found in *The Lancet* of December 19, 1903. As is well known, up to a very recent time is was considered highly probable that the sleeping sickness was due to the filaria perstans. In 1902 Drs. Low, Christy, and Castellani were sent by the Royal Society to Uganda to study the disease. After a short time Castellani announced that he had discovered a streptococcus which he believed to be the cause of sleeping sickness, but Low and Christy were unable to come to any definite conclusion in regard to the etiology of the disease. The Royal Society then sent Dr. Bruce, who, on his arrival at Uganda, was informed by Castellani that in 5 of 15 cases of sleeping sickness he had discovered trypanosomes in the cerebro-spinal fluid. Castellani's further investigations were published in "Reports of the Sleeping Sickness Commission." More recently a "Further Report on Sleeping Sickness in Uganda" has been published by Dr. Bruce and his assistants, this report bringing forward evidence to show:

1. That sleeping sickness is caused by the entrance into the blood and cerebro-spinal fluid of a species of trypanosoma.

2. That this species is probably that discovered by Forde, and described by Dutton from the west coast of Africa and called by him trypanosoma gambiense.

3. That the so-called cases of trypanosoma fever described from the west coast may be, and probably are, cases of sleeping sickness in the earliest stages.

4. That monkeys are susceptible to sleeping sickness, and show the same symptoms and run the same course, whether the trypanosomes injected are derived from cases of so-called trypanosoma fever or from the cerebro-spinal fluid of cases of sleeping sickness.

5. That dogs and rats are partially susceptible, but that guinea-pigs, donkeys, oxen, goats, and sheep up to the present have shown themselves absolutely refractory.

6. That the trypanosomes are transmitted from the sick to the healthy by a species of tsetse fly (Glossina palpalis), and by it alone.

7. That the distribution of sleeping sickness and Glossina palpalis correspond.

8. That sleeping sickness is, in short, a human tsetse-fly disease.

First, illustrative cases are given to show that there is probably a close connection between sleeping sickness and trypanosomiasis. The next question discussed was, does the blood of the general population contain trypanosomes? An examination of the blood of the population inside and outside of the sleeping-sickness area seemed to show that the parasites were altogether absent from the blood of those living outside the area where sleeping sickness is met with.

As to the difference between the trypanosomes of sleeping sickness and that of trypanosome fever, microscopically no difference of importance could be demonstrated. The result of animal experiments—and of the animals used the monkey gave far the most satisfactory results—seemed to show that the injection of blood containing trypanosomes, if injected subcutaneously, could produce a clinical picture markedly similar to the symptoms of sleeping sickness in human beings.

The next subject dealt with is that of the history and distribution of sleeping sickness in Uganda, and from the very careful observations made in this connection comes the very interesting fact that the areas of distribution of sleeping sickness and of a certain variety of tsetse fly (Glossina palpalis) are identical.

The next question was to determine whether the Glossina palpalis can carry the trypanosomes in cases of sleeping sickness to healthy animals. Here, again, monkeys were found to be the most satisfactory to experiment with, and "as a result of five experiments it may be considered proved that Glossina palpalis can convey trypanosomes from sleeping-sickness cases to healthy monkeys up to at least 48 hours after feeding."

As regards the cultivation of trypanosoma brucei, Navy and McNeal contribute an interesting article in the *Journal of Infectious Diseases,* January 2, 1904. The summary of the results of this investigation, which was carried on with great care, is as follows:

1. Trypanosoma brucei is more sensitive and more exacting in its requirements than is Tr. lewisi. It may, however, be cultivated in vitro, in tubes, and in flasks by applying the same method which was used for obtaining pure cultures of the rat trypanosome.

2. The chief difficulty consists in obtaining the first or initial culture. Of the first 50 animals from which cultures were attempted, only four gave positive results. One of these cultures has been carried on continuously from August 27 up to December 5 (100 days), and in this time has been passed through eight generations. There is no reason why the culture should not be maintained indefinitely,

3. It is possible to separate Tr. lewisi and Tr. brucei when these are present simultaneously in the blood of an anmal by artificial cultivation, since the former will grow on a medium containing one-half or less of its volume of blood, whereas Tr. brucei will not grow under such conditions.

4. The cultural characteristics are such as to enable perfect differentiation between the two trypanosomes.

5. The actively-growing cultures of Tr. brucei possess a virulence which is very nearly the same as that of the original Nagana blood. As the cultures age, and especially by exposure to a temperature of 34°, they become less virulent, and eventually, though living, may fail to infect animals.

6. Repeated injections of the attenuated cultures will probably impart solid immunity. In this way it may be possible to secure protection against the ravages of Nagana.

7. The pathogenic action of the pure cultures of Tr. brucei demonstrates the causal relationship which this organism bears to Nagana.

8. It may be considered as certain that the method which has proved successful for Tr. lewisi and Tr. brucei will prove equally useful for other trypanosomes. It will be feasible to subject the trypanosomatic diseases to experimental studies, which heretofore have been impossible. The results of these studies may lead to a clearer insight into the causation of protozoal diseases. It seems as if the time was not far distant when most of the pathogenic protozoa will be cultivated and studied in our laboratories in the same way as is now done with bacteria.

TYPHOID FEVER AND TUBERCULOSIS.

Osler (*American Medicine,* December 26, 1903) discusses the important relations which may exist between typhoid fever and tuberculosis:

1. The diseases may be concurrent. Thus in 80 autopsies of typhoid, four showed signs of chronic tuberculosis, while less frequently miliary tuberculosis and typhoid may be associated.

2. Enteric fever may be mistaken for tuberculosis. Osler regards this as rare, but mentions a case in which tuberculous pneumonia was suspected for a period of two weeks, during which time the symptoms were fever, headache, cough, and pneumonia of both sides. At the end of that time the picture changed completely and the typhoid symptoms became marked, the Widal reaction not appearing until the end of the third week.

3. Tuberculosis may be mistaken for typhoid, and, as every physician knows only too well, this occurs much more frequently. According to Osler, there are five types of tuberculous infection which may simulate typhoid fever—tuberculous meningitis, tuberculous peritonitis, miliary tuberculosis, the acute toxemia of cer-

tain lesions, and forms of pulmonary tuberculosis. Osler lays special stress on the importance of the last two, as these are considered much less frequent by the profession. Osler gives the history of several interesting cases in this connection, the first two of which in the early stages of the disease presenting symptoms markedly resembling those of typhoid fever, while subsequently the pulmonary symptoms increased, and tubercle bacilli were found in the sputum.

4. In rare cases pulmonary consumption follows typhoid fever. Osler does not agree with the statement frequently made that patients convalescing from typhoid fever are particularly prone to tuberculosis, as he believes that many of these cases did not have typhoid fever at all, but were tuberculous from the outset.

ITHACA TYPHOID EPIDEMIC.

Coville (*American Medicine,* January 9, 1904) gives the history of the much-talked-of typhoid epidemic which occurred in Ithaca during the first few months of 1903, in which 1300 cases of the disease occurred in a population of between 15,000 and 16,000. For several years the Board of Health had declared that the city water was unfit for drinking purposes in the raw state, and for many years the citizens, to a considerable extent, had depended upon boiled water or artesian or spring water. During the five years preceding the epidemic there were each year a few cases of typhoid among the students at Cornell; in 1900-1901 there were 40 or 50 of these student cases, and in 1901-1902 between 100 and 150. Of these cases only a very small proportion gave the Widal reaction. The epidemic of 1903, on the other hand, ran a much more typical temperature curve, and in most cases gave the positive Widal reaction.

Coville believes that the probable source of infection was persons with walking typhoid living in shanties close by the intake at the pumping station of the creek which supplies Ithaca with water, the excreta of such cases previously frozen being carried down into the water supply by the winter thaws of December 16-22, January 26-31, February 2-4.

In analyzing the cases Coville divides them into four classes:

1. Cases where both temperature and pulse are subnormal for 10 days or two weeks. These cases tend to relapse every two weeks, and may continue to do so up to even the fifth invasion.

2. Cases having a very moderate temperature for a few days, followed by a subnormal pulse and temperature, and also liable to relapse.

3. Short, sharp temperature cases of 5 to 10 days' duration.

4. Regular typhoid, these cases being in the main typical.

All cases of all classes had one peculiar symptom, the throat-marks of the infection—the pharyngeal walls, and especially the pillars of the fauces, the soft palate, and uvula had a dull, angry red color. There was regularly constipation throughout the disease.

The epidemic is remarkable for the following reasons:

1. The absence of sure causal proof.

2. The sharp onset and comparatively abrupt ending of the epidemic.

3. The great variety in its course, and the large percentage of atypical cases.

4. The cyclic recurrence of symptoms at intervals of 14 days, or relapses or reincubations from autoinfection in the atypical cases.

5. Many cases ran a severe and septic course. (There was much intestinal hemorrhage and pneumonia.)

6. The relatively small number of relapses in the typical cases.

7. While many people of the Cornell University campus drank city water occasionally, only a very few had a regular type of typhoid.

8. Those who drank exclusively of other than city water escaped infection.

9. Bathing in city water, the use of city water for general utility and culinary purposes caused no typhoid.

10. Outside families and the direct care of the sick, few cases of transfer infection are known.

11. The milk supply was not infected.

12. Through the extreme care of latrines and outhouse collections, practically no epidemic resulted through flies during the summer months.

13. The almost total immunity of physicians and trained nurses.

14. The death-rate was relatively much higher among the adolescent students than among the town people.

15. The comparatively high average age at death—29.6 years.

16. Many who had enteric fever and typhoid during the past two years had typhoid this year.

17. The relatively low death-rate under the conditions—6.6 per cent.

18. The large number of cases—over 1300, and probably over 1400 if the facts could be ascertained.

19. A practically average percentage death-rate for all physicians.

20. A vote of 1335 to 30 upon the 3d of March in favor of municipal ownership of the city water supply, and the establishment both of a filtration plant and of an artesian-water supply.

21. The almost total exemption of the city from typhoid now, after a small outbreak during the summer.

REVIEW IN PATHOLOGY AND BACTERIOLOGY.

Under the Supervision of José L. Hirsh, M.D., Baltimore.

Protozoon-like Bodies Found in Four Cases of Scarlet Fever. F. B. Mallory. *The Journal of Medical Research,* January, 1904.

In the skin of a boy who died 48 hours after the first appearance of the eruption of scarlet fever certain peculiar bodies were found in the protoplasm of the epithelial cells of the epidermis, between these cells, and free in the lymph-vessels and spaces of the corium just beneath the epidermis. The great majority of these bodies vary in size from a little less than 2 to 6 microns in diameter. They present a series of forms with definite morphology which strongly suggests that they are the various developmental stages of a protozoon. These bodies may be divided into two groups. The first group consists of round, oval, lobulated bodies, which stain delicately but sharply with methylene blue. Most of the bodies seem to be composed of a close-meshed, finely-granular reticulum, and occasionally contain small vacuoles. These bodies are numerous in the protoplasm of the epithelial cells, as also between the epithelial cells in the lower layer of the epidermis. The most striking and significant feature of the second group of bodies is their radiate structure. Such bodies are found in vacuoles in the protoplasm of the epithelial cells and free in the lymph spaces and vessels of the corium just underneath the epidermis. They usually contain a central round body, around which are grouped on optical section from 10 to 18 narrow segments, which are usually separated laterally from each other. The central body in the rosettes is at first large, but later it contracts and undergoes some change.

Study of the tongue and various internal organs of this case, as well as of several lymph nodes and a clot from the heart, failed to show any bodies resembling those in the skin. In a second case a piece of skin preserved in alcohol showed the bodies as numerous as in the case already described, but they stained very poorly. In a third case they occurred occasionally in small clumps in the skin, and one rosette form or body was found in a superficial lymph-vessel of the corium, and in a fourth case they were found in small numbers only in the epidermis of the tongue. In six other cases, where death occurred early in the disease, no bodies were found. In addition to these autopsy cases, four bits of skin cut from each of four adults, all ill with light attacks of scarlet fever, were studied, all with negative results.

For the staining of these bodies paraffine sections of Zenker-fixed material were used, stained first in a strong solution of eosin and then in a dilute alkaline solution of methylene blue. The bodies stain a pale, clear blue, except that the centers and the outer ends of the segments of the rosettes stain a deep blue. They stand out in fairly marked contrast to the purplish nuclei, pale-pink protoplasm, and deep-pink connective tissue.

In favor of the view that these bodies are protozoa, and not artifacts or degenerations, may be urged the fact that there are here a very definite series of bodies of characteristic and distinct morphology, which corresponds more or less perfectly with the cycle of a sexual development of the malarial parasite.

The author believes that these bodies are protozoa, and have an etiological relation to scarlet fever, and proposes the name cyclaster scarlatinalis for it.

The situation of these bodies would suggest that they spread through the superficial lymphatics of the corium, and from there invade the epidermis. How they reach the lymphatics is unknown. Along with this paper there are a series of drawings and photographs.

* * *

A Contribution to the Casuistry of Placental and Congenital Tuberculosis. Warthin and Cowie. *Journal of Infectious Diseases,* January, 1904.

The writers call attention to the fact that the question of direct transmission of tuberculosis from mother to child is still in dispute because there has been a great neglect in systematic examinations of placentas. In view of this neglect, it is not surprising that but few positive cases of placental and fetal tuberculosis have been observed. The greater frequency with which careful examinations have been made of the placenta and fetus of cattle, and the large number of cases of bovine placental and congenital tuberculosis which have been reported, strongly support the view that these conditions may not be so rare in man, and might be discovered more frequently were similar systematic examinations made. The results, loosely carried out, favor the occurrence of placental transmission as a more frequent event than is generally believed.

At the present time the view is generally held that the intact syncytial layer of the chorion forms a secure barrier against the passage of micro-organisms from the maternal to the fetal blood. The authors have analyzed all the reported cases of placental transmission, taking for criteria for the diagnosis of undoubted congenital tuberculosis the presence of characteristic anatomical changes and of tubercle bacilli. The authors give a *résumé* of reported cases under several headings:

Of the congenital tuberculosis there are five undoubted cases, the diagnosis resting upon anatomical changes and the presence of tubercle bacilli. There are 36 cases which are probable or doubtful, the diagnosis resting upon anatomical appearances (gross or microscopical) only, without demonstration of presence of tubercle bacilli, or doubtful because of age of child, non-elimination of possible syphilis, extrauterine infection, etc.

Of placental tuberculosis there are seven undoubted cases, the diagnosis resting upon demonstration of both histological changes and the presence of tubercle bacilli in the placenta.

In the table of tubercle bacilli in fetus and placenta without histological changes there are 11 undoubted cases, the diagnosis resting upon the demonstration of the bacilli by staining or by inoculation of animals, and seven doubtful cases, so regarded because of meagerness of details, length of time elapsing after inoculation, lack of control experiments, etc.

A number of investigators have also examined the fetus and placenta of tuberculous mothers for tubercle bacilli and evidences of tuberculosis, but without positive results.

The authors report a case which has come under their observation, and report it in detail, which shows the greatest completeness of study. The important features of this case are: Woman in the fifth month of pregnancy, with chronic tuberculosis of kidney and general miliary tuberculosis; abortion; death; tuberculous thrombosis of placental sinuses and intervillous spaces; tuberculosis of the placenta; tuberculous thrombi in fetal blood; presence of free tubercle bacilli in fetal circulation without histological changes.

A comparison of this case with the other cases of placental tuberculosis reported shows that the changes found in these cases are apparently identical with those described above, viz., that the so-called placental tubercles are for the chief part intervillous thrombi containing giant cells and showing caseation. It would appear that the first step in the development of placental tuberculosis consists in the formation by tubercle bacilli in the intervillous spaces of thrombi composed of fibrin and agglutinated red cells, and that the villi seem to be secondarily involved. The fact that the thrombi, even when resting upon the syncytium, do not appear to damage it, except in those cases where the vilus is almost entirely or wholly surrounded by the thrombus, as well as the more striking fact that the syncytium may even grow out upon or partly round the thrombi, speaks for a marked resisting power on the part of the syncytial layer against the tuberculous process. That this resistance is at last ineffectual is also shown by the destruction of both syncytium and stroma and by the occurrence of tuberculous proliferation of the cells of the chorionic stroma. It is therefore highly probable that the origin of placental tuberculosis is largely or chiefly dependent upon intervillous thrombosis.

The presence of so many tubercle bacilli in the maternal sinuses and intervillous spaces, when none could be found elsewhere in the maternal blood-vessels, is a point of great significance. If tubercle bacilli or other micro-organisms gain access to the maternal circulation, it would seem reasonable to believe that from the conditions in the placental sinuses—large amount of blood and relatively slow current—they would tend to collect in these blood spaces and here give rise to pathological disturbances. Such, indeed, seem to have been the case in this instance. Here undoubtedly great numbers of bacilli were free in the general circulation, and these collecting in the placental sinuses and caught in the fibrin there multiplied, caused thrombosis and excited tuberculous proliferation in the chorionic stroma. It is highly probable that intact syncytium may permit the passage of tubercle bacilli. It is, however, erroneous to assume that the normal villi are everywhere intact. From its earliest period the chorion shows progressive atrophy and growth. Anemic infarcts are constantly present, and through such areas bacillary transmission may occur.

From their studies the authors derive the following conclusions:

1. In the case of the entrance of tubercle bacilli (miliary tuberculosis or chronic tuberculosis) or other micro-organisms into the maternal blood during pregnancy, the conditions of the circulation in the placental and uterine sinuses favor their collection there.

2. If the bacilli are capable of multiplication, the first step in the development of tuberculosis of the placenta appears to be an agglutination and coagulation thrombosis of the maternal blood in the intervillous spaces. The formation of such thrombi around the multiplying bacilli may to some degree be protective in inhibiting or restricting their growth.

3. The syncytium appears to possess a certain degree of resistance against tubercle bacilli, the tuberculous thrombi in many cases being attached to an apparently normal syncytium, and occasionally the latter may even be found extending over the thrombus.

4. The question of the passage of tubercle bacilli through an apparently normal syncytium still remains open.

5. In the case of destruction of the syncytial covering the stroma of the chorionic villi may become involved in a tuberculous process either directly or by extension from a tuberculous thrombus. The syncytium of the normal placenta is not intact throughout, processes of decay and growth occurring in the chorionic villi from the earliest stages of pregnancy. In the later months the placenta is a senile organ, representing in many places an atrophic or necrotic syncytium, and through such damaged areas a passage of micro-organisms may take place. The deposit of fibrin found so frequently over such damaged areas may exert a protective action against such passage.

6. Tubercle bacilli may be found free in the reticular spaces and blood-vessels of the chorionic villi without the occurrence of histological changes of tuberculosis.

7. The fetal blood may contain great numbers of tubercle bacilli without other changes than small agglutination thrombi being present in the fetus. Inoculation shows these bacilli to retain their virulence. From this it may be assumed that the fetal tissues are relatively immune to the action of the tubercle bacillus.

8. It is not at all improbable that congenital tuberculosis is much more common than is generally supposed.

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THE PASSAGE OF TUBERCLE BACILLI THROUGH THE NORMAL INTESTINAL WALL. (A Preliminary Report.) Mazyck P. Ravenel. *The Journal of Medical Research,* December, 1903.

The object of the experiments of Ravenel was to ascertain if at the portal of entry of the tubercle bacillus the primary or the oldest lesion is always to be found, as some writers have held. The writer had noted that in animals infected by feeding the lungs were often extensively involved when the intestines were either free of lesion or only slightly affected.

His method of experimentation was as follows: Healthy dogs were selected and kept under observation for some time. A purge of castor oil was given, and the animal fasted for 24 hours afterwards. A single dose of an emulsion made of equal parts of melted butter and warm water, containing a large number of tubercle bacilli, rubbed into a smooth paste, was then given by means of a stomach tube. Three and a-half to four hours later the dog was killed and as much chyle as possible collected, together with the mesenteric glands. With this material guinea-pigs were inoculated intraperitoneally. Microscopic examinations were also made. The entire intestine was then carefully examined after washing it out, and in two cases microscopic sections were made from several portions of the gut. In no instance would any lesion be detected.

The experiments were carried out on 10 dogs, eight of which gave positive results. From these eight, 24 guinea-pigs were inoculated. Of these 21 showed well-marked tuberculosis; one was lost, and two remained well. The macroscopic diagnosis of the guinea-pigs was in every instance confirmed by microscopic examination of the sections. From these experiments the author concludes that under certain conditions tubercle bacilli pass through the normal intestinal wall with great facility and rapidity. The most favorable condition for this to take place appears to be during the digestion of food made up largely of fat. When we remember that the chyle is carried directly into the blood-stream through the thoracic duct it is easy to understand how it is that infection through food may show itself first in the lungs, or, at any rate, that the lesion in the lung may be as old as the intestinal lesion.

The claim that food tuberculosis should show itself in a primary intestinal lesion is fallacious and misleading.

Society Reports.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD MONDAY, JANUARY 18, 1904.

Dr. Erlanger read a paper on the results of some recent experiments on blood pressure. The pressure usually estimated is the maximum pressure, but the difference between this and the minimum pressure (a quantity which Dr. Erlanger calls the pulse pressure) is, he has found, the most important thing to determine. It measures the velocity of the blood flow, corresponds to the mean blood pressure, and is nearer the minimum than the maximum. It was found that in the apparatus usually used to measure blood pressure the variations in the size of cuff lead to inaccuracy in the results; for, by determining the intra-arterial pressure (which is, of course, the true blood pressure), the readings, when a narrow cuff was used, were found to be always too high. By placing the cuff on the bared artery this elasticity error was found to be in the tissue, and it was shown that when we determine blood pressure clinically in the brachial artery we practically measure it in the aorta. A case of postural albuminuria was studied with reference to arterial pressure, and it was found that with the patient recumbent the pressure was lowest; that it rose on standing, and fell again on sitting. The maximum pressure, however, showed practically no changes with the posture. The pulse-rate varied inversely with the pulse pressure, but the volume of the arm used in the determination varied directly with the pressure. The albuminuria disappeared when the patient sat or lay down, but was present when he stood, and the angle at which it appeared was found to be 30°, the place at which pressure changes were first noticed. It was found that increased pulse pressure gave a diminution in the urine output, with an increase of the solids and the nitrogen. Albumen in the urine means a lowered vitality of the renal epithelium, but these experiments suggest that the circulatory changes may be the primary factor. The pulse pressure, and not the maximum pressure, which is the quantity usually estimated, is the important feature in blood-pressure work.

Dr. Futcher referred to a recent case of cyclic albuminuria in which a fairly large albumen content, with a high blood pressure, changed, by means of rest in bed, to a trace of albumen and a pressure of 112 mm. of mercury.

Dr. Carey Gamble reviewed Dr. Head's recent paper on the mental symptoms connected with distinct visceral changes. Head divides the symptoms into hallucinations, moods of depression, etc., suspicions, loss of memory and attention, and active insanity. Dr. Gamble reported several cases which seemed to agree with Dr. Head's theory that insanity is nothing more than mental wrongness, and due to visceral changes. The first was a case of mitral stenosis, with hallucinations of sight occurring in the morning and after attacks of pain. In another patient asthma was associated with olfactory disturbances in which coffee gave the sensation of H_2S. Another showed auditory delusions, with periods of depression. In this case the visceral change was an inherent pericarditis. Two of the cases with stenotic lesion of the mitral valve expressed their mental changes in periods of depression and exaltation and moods of suspicion. In one patient associated with asthma and emphysema there was a loss of attention and memory and great unreasoning fear. Depression, with arterio-sclerosis, and hallucinations, with aortic insufficiency, were the other two cases in the series.

Dr. Paton called attention to the fact that the mental symptoms following acute diseases may be either the ordinary neurasthenic conditions, which are stable in character, or the so-called psychesthenic conditions, and we know of no explanation why they should assume one character rather than the other.

Dr. Sampson read a paper on the periureteral arterial plexus. His attention had been called to this anatomical feature by the importance of the ureters in operations for carcinoma of the cervix. The plexus is supplied by the ovarian, renal, uterine, vaginal and iliac arteries, and also gets direct branches from the aorta. The anastomosis is free, and any vessel in the plexus may be injected from any other. Dr. Sampson found that when the smaller branches which are intimately connected with the ureters were stripped off, and slight damage done to the ureter, necrosis occurred. Clinically, the ovarian, internal iliac, and uterine arteries have been tied with the idea of reducing the blood supply of malignant growth, and no necrosis has followed. This is, of course, easily explained by the part which the renal artery takes in the formation of the periureteral plexus. The pelvic portion of the ureter is inclosed in a fibrous sheath, and one must, in operating on a carcinomatous uterus, guard against any interference with the periureteral plexus and any undue insult to the fibrous sheath in which it runs.

MEETING HELD FEBRUARY 1, 1904.

Dr. E. K. Cullen showed a case of sclero-derma in a girl aged 14. Her first complaint had been burning of the back of the left shoulder. Two years ago she had struck her shoulder, but without bruising it, and ever since has had attacks of pain after slight blows in this region. In April, 1903, a whitish patch with a red border appeared over the left scapula, and in August this was a patch of typical sclero-derma. Its border was formed by a plexus of vessels. The thyroid was palpable. The patient was put on thyroid extract, and the skin has been getting softer ever since, the change being noticed chiefly in the center of the lesion. The pain, however, has been getting more severe and less drawing and burning in character. Sensation and blood are both normal. The thyroid treatment has been kept up continuously since the onset, with the exception of two weeks, when it was stopped on account of pain, for which acetanilid and salol were given without success. The patient's health has been perfect, there have been no unfavorable symptoms, and the sclero-derma is now gone. The etiology of sclero-derma is unknown, but it affects chiefly women, and there is often neurotic history. The circumscribed form affects chiefly the skin and leaves muscular action unimpaired. The prognosis is more favorable than in the acute form. Thyroid and suprarenal extracts, together with baths and electrolysis, have been the chief means of treatment.

Dr. Osler said that this case was unusual in its favorable course. Since 1892 19 cases of sclero-derma have occurred in the Johns Hopkins Hospital, only two of which were local. The diffuse form is the most appalling disease we know, but between the two forms there is a middle group much like the disease recently described by Gowers as local pan-atrophy. Two of our diffuse cases were arrested on thyroid treatment.

Dr. Campbell reported a case of myelogenous leukemia in which the spleen returned to normal size and the leucocytes to normal. The patient first complained of pain below the left rib and a good deal of weakness. Her blood-count showed anemia, with a leucocytosis of 350,000, many myelocytes being present. She was put on large doses of Fowler's solution, and in three weeks the leucocytes had fallen to 4000. The blood picture showed many normoblasts, but the presence of myelocytes and the clinical symptoms all pointed to leukemia. The condition improved remarkably under treatment, and on May 4, 1903, the spleen (which had orginally reached the umbilicus) was just palpable and the blood picture was practically normal. In October the patient's weight had increased much, her color was good, her spleen could not be felt, but there was some suggestion of arsenical neuritis. A recent blood-count showed no myelocytes. There are in the literature four cases showing improvement under treatment with various measures, and it is a question whether this case can be considered cured by the arsenic, but there is no doubt about her wonderful improvement.

Dr. Osler said that three cases of this disease have occurred in the Johns Hopkins Hospital in which the leukemia disappeared under treatment, but in only one of these did the spleen become impalpable.

Dr. Marshall read a paper on the loco disease seen in the West. The condition affects chiefly horses, and shows itself as attacks like acute mania. A horse previously gentle will suddenly, without apparent cause, become quite unmanageable and do odd things. The disease is chronic, the animal emaciates, and usually dies from cachexia. For sheep, cows, and other animals the symptoms are less constant, and show themselves in weakness, tremor, and stiffness of gait. The disease was first described in Mexico and a little later in Texas and California. It occurs from Texas to Montana and from California to Kansas. Its cause is said to be by the cowboys a weed of the wild-pea family. It occurs usually in young animals. Dr. Marshall autopsied 15 sheep affected with a severe form of this disease. In all but two of them he found intestinal parasites, and his work led him to believe that these parasites may have something to do with the cause of the disease, particularly as the condition shows a seasonal variation very similar to that observed in other parasitic diseases. The loco disease is therefore probably not due at all to eating the loco weed, but is a name under which many diseases are included, some, if not all, of them probably parasitic. The ranchers experience great loss from this condition, and the question as to the nature of the disease is an important economical problem.

Dr. Futcher reviewed pneumonia in diabetes, the subject being suggested by a recent case in which, with the usual symptoms of diabetes, there was an acute and fatal pneumonia, with all the physical signs, but without cough, expectoration or chill. Out of 134 cases of diabetes at the Johns Hopkins, three have had lobar pneumonia—all fatal. The disease is therefore comparatively rare, but it is very acute and fatal, and often insidious.

Dr. Smith reported a case of diabetes with coma in which pneumonia developed, and though the case was regarded as hopeless, the patient got perfectly well.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION ON CLINICAL MEDICINE AND SURGERY.

MEETING HELD MARCH 4, 1904.

Dr. S. Rosenheim read a paper on tracheal tumors, reporting a case which had occurred in the surgical wards of the Johns Hopkins Hospital. The condition is a rare one, of 3120 tumors reported in the upper respiratory tract, only 70 occurring in the trachea. This lack of susceptibility of the trachea to new growths is probably due to its functional passivity. Dr. Rosenheim's patient was a woman aged 23, who complained of difficulty in breathing. Nine months before admission she first noticed a heavy, choking sensation in the air passages, and cough, dyspnea, and slight expectoration soon appeared. Cough without expectoration were present on admission, no glands were palpable, and heart and lungs were negative. Laryngoscopic examination showed normal larynx and vocal cords, but just below the cords was a small, red, smooth tumor which did not move with respiration or phonation. Operation was done by Dr. Halsted, a preliminary trachetomy being the first step in the procedure. Opposite the cricord cartilage and the upper tracheal rings the tumor was found. The patient stopped breathing during the operation, but anal dilation was successful in stimulating respiration. Recovery was uneventful, and the patient was perfectly well six months later. The tumor was capsulated; contained mucoid fluid; on section showed trabeculae, with colloid in the intertrabecular spaces. Pathologically the diagnosis was colloid fibro-adenoma.

Tracheal tumors are clinically all alike. They were first seen laryngoscopically by Turck. Of the benign neoplasms all types occur, papilomata, fibromata, and chondromata being the most frequent. Carcinoma and sarcoma are the types of malignancy most often met with. On the posterior wall of the upper and lower portions of the trachea tumors are most frequently seen. Of the infections granulomata lues is the most frequent form, but tubercular tumors are also rarely seen. Another type of tumor in this region consists of the proliferations which sometimes occur after tracheotomies. Thyroid tumors are not unusual, are seen most often in women, and consist of typical glandular tissue. Bruns and others hold that they represent merely an embryonic misplacement, but Ziemssen claims that they are due to thyroid proliferation and actual in growth, involving the trachea.

The symptoms of the tracheal tumor only occur when stenosis is present. Dyspnea is first to appear, then come enfeebling of the voice, with hoarseness. Lung changes (bronchiectasis, bronchitis, atelectasis) may occur. The diagnosis is positively made by laryngoscopic or tracheoscopic examination; but, excluding esophageal and thyroid tumor, a husky voice is most suspicious, provided there be no aortic aneurism. The nature of the tumor is practically impossible to be sure about. Prognosis is, without operation, most unfavorable. The tumor may be removed by laryngo-tracheotomy or by endotracheotomy.

Dr. H. M. Thomas reported two cases of hysterical paralysis in men. Hysteria, on account of its frequency in women, is easily overlooked in the opposite sex, but it does occur, and with some frequency. The first patient was a farmer and banker who had led a more or less sedentary life since his 18th year. He had always been bothered by constipation, with occasional attacks of abdominal pain and vomiting, which he attributed to nervous dyspepsia. For this he was treated at the Johns Hopkins Hospital and was discharged well. He was in the next few months somewhat overworked, and suffered three severe nervous attacks. A little later he was taken with pain in the left side, diagnosed pleurisy. He became well from this attack, but his body was afterwards drawn over to the left side. Soon after an area of numbness appeared in the left hip, and the left leg began to drag, and a fourth nervous attack supervened. Patient was admitted with pain in the left side, subjective numbness, paralysis of left leg below the knee. On the inside of dorsum of foot there was an area where touch and pain sensations were diminished (pressure on the sciatic nerve was thought of, but the anesthesia was on the wrong side of the foot). Reflexes were normal, and the foot was held up when electricity was applied and the current shut off without the patient's knowledge. He walked dragging his toe. Treatment was electrical and psychical, and the patient soon got perfectly well. The second case was a boy of 20, who, while romping one evening, received a slight injury to his arm, with a good deal of shock. A large amount of whiskey was given to treat the shock, and the following day there was great pain in the right arm, absolute paralysis appearing 24 hours later. An injury to the brachial plexus was, of course, diagnosed. When first seen by Dr. Thomas patient showed absolute powerlessness of the arm, with complete anesthesia to pain, touch, and temperature extending to the wrist, where it ended sharply. Muscular sense was wanting in the same area. Paralysis affected the shoulder and arm, but there was slight movement of the fingers. Reflexes and electrical reactions were normal, which, together with the distribution of paralysis and anesthesia, made organic disease out of the question. Electrical treatment was given. On the second day recovery had occurred as far as the elbow, and on the fourth day patient was perfectly well. In connection with these cases Dr. Thomas referred to the suggestion of one of the European observers that the hysterical stigmata may be due to suggestion, and emphasized the importance of avoiding questions which may give the patient a clue as to what symptoms he *ought* to present.

Dr. L. K. Hirschberg said that he had recently seen a case of hysterical mutism in a man of 18 who had recovered completely in three weeks.

MEETING HELD MARCH 18, 1904.

The meeting was devoted to a discussion of pneumonia.

Dr. J. H. Pleasants read a paper on the statistics of the disease, and exhibited a chart showing the mortality curve for tuberculosis and pneumonia during the past 50 years. The former has steadily fallen and the latter steadily risen, the banner years for pneumonia deaths in Baltimore being 1900 and 1903 to 1904. The mortality from pneumonia this year, though large, has been exaggerated by the newspapers. Exposure at the time of the fire and unusual climatic conditions have been suggested as the causes, but there is little proof for either. The large negro population of Baltimore, of course, accounts for a great number of the cases here, the total deathrate in that race being twice that of the white. The morbidity of the disease is hard to estimate, and whether the mortality increase of the last 50 years is really due to an increased number of cases or an increase in the fatality it is impossible to say. The following factors must be considered in explaining the increased mortality of the disease: (1) Increase in the density of the population; (2) General prolongation of life and reduction of intestinal diseases among children; (3) Climatic fluctuation; (4) Increase of immigration; (5) The negro element; (6) More accurate diagnosis, with better autopsies and death reports; (7) Decrease of death-rate from tuberculosis; (8) The presence of influenza, with which pneumonia is evidently closely connected; (9) A theoretical increase in the virulence of the pneumococcus.

Dr. W. H. Welch described the present bacteriological knowledge concerning pneumonia. In spite of the complete studies of the disease, this knowledge has had practically no influence on the clinical attitude. The organism first discovered by Sternberg in 1880, confused with a bacillus by Friedländer in 1883, and clearly described in 1886 by Fränkel and Weichselbaum, is found in all cases of true lobar pneumonia. It is a delicate organism, but by proper methods can always be demonstrated. It is characterized by short viability in cultures and in the body and by its causing a local inflammation, but it also sets free a toxine (causing the pneumonic fever of Flint). Following the discovery of the toxine of diphtheria and tetanus, attempts were made to produce a similar substance for pneumonia. This, however, is bacteriologically an impossibility, and the evidence that the pneumococcus produces a toxine is entirely clinical. The organism is thought by some to be only a variety of the streptococcus. It is harbored normally by 20 per cent. of all people, and the accessory causes of pneumonia are therefore almost the efficient causes. In fact, there is no disease in which such emphasis must be laid on the so-called accessory causes. It is hard to decide to just what extent the disease is contagious, but there is no bacteriological basis for making it a reportable disease. It is unknown in Arctic expeditions, which would seem to point against exposure as one of its causes. It may cause septicemia. The immunity which it produces is in human beings only transitory. A definite artificial immunity, though of not a high degree, is easily produced, and the serum from animals so immunized undoubtedly protects against the disease. But all antibacterial (as distinguished from antitoxic) sera are uncertain, and this is especially true of the pneumonia serum, the clinical value of which is of very great doubt.

Dr. Wm. Osler discussed pneumonia as he has seen it in his hospital experience. One of the striking features of the disease is its saneness. In the past 26 years he had studied the disease in three large hospitals in various parts of North America, but its clinical features were always uniform. This is particularly true of the mortality, which Dickerson showed several years ago to remain (when large numbers of cases are considered) absolutely uniform. In the Johns Hopkins Hospital the average mortality has been 26 per cent., and the same figures hold for the Massachusetts General Hospital, for the Montreal General, and for Blockley. In private practice, of course, a smaller proportion of deaths is seen, but terminal pneumonias are often overlooked here, ether pneumonias are very rarely seen, and other causes operate to reduce the mortality. There is no disease the familiarity with which can be more valuable to the student than pneumonia, and at the Johns Hopkins the students are thoroughly drilled by constant clinical contact with this disease and with typhoid.

Dr. I. E. Atkinson discussed the therapeutic side of the question. Pneumonia is largely a local inflammation and it ends by crisis. The body is therefore limiting the disease anatomically and preparing in the end to overcome it, which, if undisturbed, it can do. The indications, then, are plainly (1) to aid the natural tendency to recovery; (2) not to interfere with it (as, for instance, by the administration of nauseating expectorants). Some of the cases will die and others will get well, no matter what we do, but between these two classes lies the field for therapeutic interference. There is, of course, no specific for this disease. Bloodletting, veratrium, viride, and sera, whatever their value, are not specifics. Bloodletting is too much neglected, and is particularly of value when the right heart is overdistended. The therapeutic rule should be to go slow with treatment, to watch the case carefully, and to try to help nature rather than to make any definite attack on the disease itself. Rest, relief of pain, and sleep should be obtained by morphia. Small doses of strychnine and alcohol provide the necessary stimulants when the heart lags. The ice bag and cold sponges should, of course, be used. Oxygen is of value if administered in time. Digitaline and nitroglycerine should be avoided, but saline infusions are of value in increasing diuresis.

Book Reviews.

NERVOUS AND MENTAL DISEASES. By Archibald Church, M.D., and Frederick Peterson, M.D. With 338 illustration. Fourth edition, thoroughly revised. New York and London: W. B. Saunders & Co. 1903.

The section dealing with neurology in this book is edited by Dr. Church, while that of psychology is edited by Dr. Peterson. None but the most favorable criticism can be given the work, and especially is this true of the chapters dealing with neurology. The entire subject-matter of the book is well systematized, and the style and print are clear. The subjects are treated in a manner agreeable both to students and physicians. The illustrations are numerous and instructive. In some instances the pathologic anatomy could have received more attention. It is pleasant to see that the book begins with an earnest appeal to the reader warning him against falling into the error of making snapshot diagnoses of nervous disorders. The subject of history-taking and the proper conduct of careful physical examination are well presented. The chapters on herpes zoster, intermittent limping, and epilepsy combined with myoclonus have been rewritten, and have received more attention in this than in the previous editions.

The section on psychology is patterned after the modern German school of teaching, and really at the present day appears the only proper method of considering this difficult subject. In the chapter on paranonia an especially instructive review is given of a book of 400 pages written by a paranoiac, in which he describes his disease and interprets with a remarkable clearness his unfortunate state. Peterson speaks as follows of this book:

"It was during the last two years of his stay at the asylum, while still the victim of constant auditory hallucinations and of mingled delusions of persecution, unseen agency, and grandeur, that he wrote the volume of 400 manuscript pages, with the extraordinary title of 'The Piling of Tophet,' this title being founded upon Isaiah xxx, 33. The book itself is a deeper history of his life and mental evolution than any but himself could furnish. It is remarkable for its excellent literary style and for its keen reasoning and psychological analysis of his own disordered mind. In it he dissects his hallucinations and delusions like a skilled anatomist. It is fascinating as a novel. Every page has its value as an index of the condition of his mind from childhood to the last years of his confinement in the asylum, and the story is told with a directness and simplicity that marks truth upon every statement, and lends such charm as pertains to all works which portray life with the utmost fidelity. In his preface and introduction he makes a diagnosis of his own disease."

A Reference Handbook of the Medical Sciences, Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By various authors. A new edition, completely revised and rewritten. Edited by Albert H. Buck, M.D. Volumes V and VI. New York: Wm. Woods & Co. 1903.

The new edition of this valuable handbook has previously been noticed in the Maryland Medical Journal. The present volumes, V and VI, run from Inflammation to Rutland. The article on inflammation is by Councilman. There are 25 separate articles on insanity, of which the first two are by Paton and Berkely. Ten articles treat of the medical and surgical affections of the kidneys, and like amounts of space is devoted to the liver and lungs.

Under the head Nematoda one finds very satisfactory descriptions of several parasites which have of late become interesting to American physicians. This article is by Henry B. Ward, who also writes on "Parasites," and gives a good plate illustrating the eggs of human parasites.

There is a rather poor article on photo-micrography—no better, in fact, than that found in the old edition.

Eugene Opie's article on the plasmodium malariae is a very good one.

As compared with the former edition of this handbook these volumes are found to fully cover the advance of medical science in the interval.

An Introduction to Vertebrate Embryology. Based on the Study of the Frog and Chick. By Albert M. Reese, Ph.D. (Johns Hopkins).

This is a concise text-book on the development of the frog and chick. The author does not claim any originality in the compilation of the volume, but he has condensed the well-known facts of the subject to make them more accessible to the medical student. We think he has done this very well. The numerous cuts throughout the book are also well-known illustrations, and have been judiciously selected.

The work ought to find a place among the college text-books to convey about all and probably more than is usually taught to the medical student on this important branch of biology, and for such we gladly recommend it

J. H.

International Clinics: A Quarterly of illustrated clinical lectures and especially-prepared articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Opthalmology, Otology, Rhinology, Laryngology, Hygiene, and other topics of interest to students and practitioners, by leading members of the medical profession throughout the world. Edited by A. O. J. Kelly, A.M., M.D., Philadelphia, with collaboration of William Osler, John H. Musser, James Stewart, John B. Murphy, A. McPhedran, Thomas M. Rotch, John G. Clark, James J. Walsh, J. W. Ballantyne, John Harold, Edmund Landolt, Richard Kretz, with regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels, and Carlsbad. Volume I. Fourteenth series. Philadelphia: J. B. Lippencott Company. 1904.

The fourteenth series of this familiar and popular quarterly begins with a volume of greater size and somewhat more interesting contents than its predecessors. There are eighteen special articles, a rather less number than the volumes hitherto contained. All of these are by first-rate authors. The departure from former practice assists in the presentation of good reviews of progress in medicine during the year 1903. This adds distinctly to the value of the book. These reviews are three in number: Medicine, by David L. Edsall; Surgery, by Joseph C. Bloodgood; Treatment, by A. A. Stevens. More than a hundred pages are devoted to this *résumé,* and we are inclined to think that the hold of International Clinics upon the approval of the profession will be strengthened by such reviews.

Surgical-Anesthesia Addresses and Other Papers. By Henry J. Bigelow. Boston: Little, Brown & Co. 1900.

This volume contains the papers by Dr. Bigelow relating to the discovery of surgical anesthesia, together with addresses and other papers, some of which are here published for the first time. In these pages one gets a history of the whole controversy over the discovery of anesthesia and the history of the introduction of ether into surgery by an eye-witness, and who, more than anyone else, was responsible for the immediate and general adoption of ether anesthesia for the relief of pain in major surgical operations. One who is interested in this greatest contribution to surgery from America will not fail to read these articles by Bigelow.

This volume is one of a series comprising a complete and uniform edition of Dr. Bigelow's writings. The other volumes are "Memoirs;" "Orthopedic Surgery—Medical Papers;" "Dislocations and Fractures of the Hip;" "Litholopaxy." In this edition the binding is substantial, the type is larger, the margins wide—altogether a very attractive edition.

We are fortunate in having brought together in one uniform complete edition the scattered papers of this eminent surgeon. These volumes should form a part of every physician's library.

MARYLAND MEDICAL JOURNAL.

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BALTIMORE, JUNE, 1904

THE SMALLPOX SITUATION.

THE Commissioner of Health of Baltimore has addressed a letter to the practicing physicians asking their individual co-operation in renewing and extending the benefits of vaccination. During the past five years the danger of an extensive outbreak of smallpox has been so frequently alluded to that the lay public begins to suspect that the danger cannot have been very serious, or one at least of the anticipated outbreaks should have materialized. Of late members of the medical profession have begun to inquire whether the admonitions of the Health Department have a sound basis in fact.

Baltimore's exemption from smallpox throughout the past five and a-half years would, if displayed, be quite conspicuous, but our good fortune in this respect is hardly a proper subject for show by the City Health Department, seeing that it can only be recognized as good fortune by comparison with the history of smallpox in other cities, and remembering also that there is still plenty of infectious and infectible material here and hereabouts to furnish a first-class epidemic.

The simplest explanation of our comparative exemption from smallpox would be to say that the Health Department has been wide-awake and swift in action whenever smallpox has appeared. This would tell a large part of the story, but not all of it. Both the people and the medical profession fail to appreciate a most important factor in the success of operations against smallpox, namely, that the profession itself has furnished with the utmost promptness the information upon which those operations have been conducted. The amount of this information has been so small and the physicians who have furnished it are so few in number that the profession as a whole is not conscious of having rendered a public service of any particular value.

But it is highly significant that the Baltimore health authorities have not once broken down at the point where the health authorities of the cities have been beaten—namely, in the matter of initial information. Mistakes have been made, to be sure; neither officials nor private practitioners have been exempt from error, but the contentious ignorance upon which smallpox has subsisted throughout the country for five long years does not apparently exist in Maryland. The value of our advantages in this respect can hardly be overestimated. It speaks well for the relations between the authorities and the private practitioners.

The situation at the present moment is somewhat less assuring than at any time in the past 20 years. It is perhaps far from alarming, but it unmistakably calls for active preparation. In January one case of smallpox occurred in Baltimore; in February, four cases; in March, nine cases; in April, 14 cases; in May, 17 cases. Out of the whole number about a dozen cases were infected outside of Baltimore city, and of the rest a considerable number occurred in persons held under observation after known exposure; but the indications are very clear that some source of infection within the city has escaped recognition.

The facts which are seen give no ground for immediate alarm, but the facts which are out of sight must, if we are prudent, be considered threatening. Perhaps the infection may disappear without giving any further account of itself, but if we leave its discovery to chance it may spring an unwelcome surprise upon us. The situation contains an element of doubt which has not been present at any previous time, and Dr. Bosley has taken the surest means available to avoid surprise, namely, to invite renewed vigilance on the part of the medical practitioners.

THE CASE AGAINST THE BUTLER WATER COMPANY.

Some of the sufferers from the recent typhoid epidemic at Butler, Pa., have formed an association for the purpose of suing the water company for damages. If the reports of the epidemic are true, it would at first glance appear that the blame for this murderous epidemic can easily be fastened on the water company. If guilt could only be fastened upon some person or corporation, and in a single instance severe punishment were inflicted, such an event would be a great step in public hygiene.

There is not the slightest doubt that many hundreds of private water companies are constantly engaged in the sale of very dangerous drinking water, with full knowledge of what they are doing, and with little, if any, fear of punishment. And the worst of it is that they are, as a rule, fully protected in their nefarious business. The chances are that the company supplying Butler may admit that the epidemic was indeed due to the drinking water which they supplied, and may still escape pecuniary responsibility for the terrible results of that epidemic.

The chances are that the water company never agreed to furnish the town with good water, although the contract is probably long enough to have secured every right both of the company and of the citizens. In contracting with a town for a public water supply all the advantages are, as a rule, with the water company, particularly in the matter of writing a formal contract. It would be safe to say that no more than 1 per cent. of the contracts now in force between private water companies and municipalities stipulate that the water supplied shall be safe for drinking, though the stipulations are usually definite as to the quantity of water to be supplied. Indeed, the requirements as to quantity are often used to mask exceptions as to the quality of the water. The terms of the contract are indeed the stock surprise served by private water companies upon dissatisfied town authorities. It is probable that the authorities of Butler consented in more or less explicit terms to the use of this particularly murderous water. Such at least is the nature of the agreements under which Maryland towns are supplied by private water companies. The case is no better where water-works are owned by the municipalities. The citizens of Butler really paid no excessive penalty for their carelessness as to drinking water; indeed, they should be thankful to the water company for taking their toll in a lump amount instead of distributing the tax over a period of years, so that the loss of life might have excited no comment. A considerably heavier slaughter could have been and commonly is inflicted by the fractional method. It is in the power of any water company to immunize its consumers against typhoid fever, and to make epidemic typhoid impossible, by simply keeping the water lightly seeded with typhoid bacilli. It is foolish of any water company to allow accident to determine amount and kind of infection when exact results could be obtained by a little forethought. Fortune was doubly unkind to the Butler water company first in allowing the town to accumulate a susceptible population and then pouring an excessive dose of infectious material into the water. A careful adjustment of dosage would have kept the people fairly immune, with a somewhat larger loss of life perhaps, but at a saving of much gossip.

But for this blunder Butler might have been as contented with its water supply as any other town in Pennsylvania, and with as good reason.

THE SWEETS OF FORGIVENESS.

Dr. John Turner's "Physiology" has reached its fourth edition. This announcement recently appeared in the advertising columns of the daily press, together with the portrait of the author and the interesting information that the Maryland Medical Journal has publicly acknowledged its erroneous judgment of the book. Clippings of the advertisement have been sent to the Journal from several anonymous sources, indicating, perhaps, that the Journal's friends like the publicity of our predicament. A critic seldom enjoys apologizing to a mishandled author, but the turn of affairs in this instance has been quite delightful. Very poor books are seldom noticed in the Journal, but Turner's "Physiology" was invincible. The reviewer confesses that he expected the book to be extremely bad, but it transcended every anticipation. In perusal it proved as fascinating as anything in the whole range of literary and scientific misadventure.

Medical Items.

Dr. Harry Adler has removed from 1215 Madison avenue to 1804 Madison avenue.

The consolidation of the two New York State medical associations was effected on May 6, 1904.

At the recent town election of Havre de Grace the loan of $20,000 to establish a sewer system was carried. Baltimore next?

A number of sufferers in the recent typhoid epidemic at Butler, Pa., have organized and instituted suit against the water company for damages.

Governor Warfield's choice of medical officers of his staff has fallen upon Dr. J. M. T. Finney of Baltimore and Dr. Richard Hill of Prince George county.

Dr. Hiram Woods is recovering from the serious accident which befel him in the collision of his carriage with a runaway team in Druid Hill Park on April 22.

Dr. James Bosley, commissioner of health of Baltimore, will undertake extensive vaccinations, employing an extra force of 25 physicians as special vaccine officers.

The medical department of the National University, Washington, will merge with the medical department of Columbian University from the beginning of the next session.

The Council of the Medical and Chirurgical Faculty has selected Ocean City as the place for holding the next semiannual meeting, and has named September 16 and 17 as the dates.

No case of smallpox occurred in Maryland outside of Baltimore in May, though two negroes from Sparrow's Point developed smallpox two days after arrival in Baltimore and within a week after their arrival in Maryland.

Miss Clara Barton resigned the presidency of the American Red Cross, and her resignation was accepted on May 14. This event does not bring the Red Cross at once into peaceful waters, for the demand for a thorough investigation and complete reorganization is as urgent as ever.

A follower of Mrs. Eddy was recently examined in the psychopathic ward of Bellevue Hospital, New York, on account of her refusal to take food. Consistency in the practice of Christian Science seemed to her to require abstinence from food.

Dr. W. P. Spratling, superintendent of the Craig Colony for Epileptics, has been elected superintendent of Bellevue Hospital, New York. Dr. Spratling is particularly well known and well thought of in Baltimore, where he studied medicine, graduating at the College of Physicians and Surgeons in 1886.

Among the recent cases of smallpox in Buffalo is a school teacher who never was vaccinated. If there is an unvaccinated school teacher in Maryland, the public-school authorities are unaware of it. Smallpox is perhaps the only agency able to reveal the name and address of such a teacher. Perhaps smallpox spotted the only unvaccinated teacher in Buffalo, but the record does not say as much as that.

Frances Power Cobbe, perhaps the most scurrilous of the English antivivisectionists, and certainly as unscrupulous as any, died recently. Her mental obliquity was never better displayed than in her preparations for death. She had an insane fear of being buried alive, and had a clause in her will voiding all bequests unless the fact of her death should be fully established by severing the arteries of her neck. This kind office was done upon her body by a fellow-agitator against vivisection.

Dr. Roberts Bartholow died at his home in Philadelphia on May 10 at the age of 73. Dr. Bartholow was born in Maryland, and graduated at the University of Maryland in 1852. He became a member of the faculty of the Jefferson Medical College in 1879, and his career from that date was highly distinguished. His reputation rests chiefly upon his writings on materia medica and therapeutics. He retired from active teaching several years ago, but continued in practice up to the time of his death.

THE horrible trolley accident at Newark, N. J., on February 19, 1903, has furnished a precedent in the valuation of lives of children with a distinction of sex. Among the children killed in that accident were a son of Evan Eastwood and a daughter of Henry Werpaff. Suits at law resulted in verdicts of $6000 for the loss of the boy and $5000 for the loss of the girl. Judge Adams refused to alter the verdict for $6000 on the life of the boy, but reduced to $3000 the $5000 awarded for the life of the girl. The judge's decision was based on the view that the value of a girl from the wage-earning standpoint is about half the value of a boy.

A NUMBER of changes among county health officers have occurred during the month. Dr. John E. Sansbury succeeds Dr. Louis A. Griffith as health officer of Prince George county; Dr. Charles H. Brace succeeds Dr. J. M. Spear as health officer of Allegany county; Dr. W. G. George succeeds Dr. Charles Cockey as health officer of Queen Anne county; Dr. F. F. Greenwell succeeds Dr. Thomas S. Lynch as health officer of St. Mary's county; Dr. J. N. King succeeds Dr. A. J. Williams as health officer of Calvert county; Dr. J. W. Cooper succeeds Dr. Howard Bratton as health officer of Cecil county; Dr. J. M. Price has been elected health officer of Frostburg; Dr. C. N. Athey succeeds Dr. John C. Schofield as sanitary officer of the twelfth district, Baltimore county; Dr. R. F. Price succeeds Dr. J. H. Drach as sanitary officer of the sixth district, Baltimore county.

A CONFERENCE in psychiatry and neurology was held at the Sheppard and Enoch Pratt Hospital on May 9. The program was as follows: "On the Nature of the Disease Process in Insanity," by Dr. Adolph Meyer of New York; "Congenital Spastic Rigidity," by Dr. William G. Spieler of Philadelphia; "Development of Insane Ideas," by Dr. Stewart Paton of Baltimore; "The Sensory Distribution of the Fifth Nerve," by Dr. Harvey W. Cushing of Baltimore; "Amaurotic Family Idiocy," by Dr. Bernard Sachs of New York; "Statistical Data in Paresis," by Dr. Edward N. Brush, superintendent of the Sheppard and Enoch Pratt Hospital; "Mechanism of Exophthalmos—Pulse and Blood-Pressure Curves in Manic Depressive Insanity," by Dr. Wm. R. Cornell, clinical assistant Sheppard and Enoch Pratt Hospital; "Spinal Puncture as a Diagnotic Procedure in Paresis," by Dr. George E. Chinn, clinical assistant Sheppard and Enoch Pratt Hospital; "Delirium Following Operations on the Bile Ducts," by Dr. John M. T. Finney of Baltimore; "Demonstrations of Specimens," by Dr. George Streeter of Johns Hopkins Medical School; "Methods of Examination by the Pupil," by Harry M. Thomas of Baltimore.

ON the program for the meeting of the American Medical Association at Atlantic City one finds the folowing papers by Maryland members: "Pathology of Arteriosclerosis," by Dr. Wm. H. Welch; "Arteriosclerosis From Acute Infectious Diseases," by Dr. W. S. Thayer; "Arteriosclerosis and Angina Pectoris," by Dr. Wm. Osler; "Relation of Cholelithiasis to Diseases of the Pancreas," by Dr, Eugene L. Opie; "Pathology and Etiology of Arthritis Deformans," by Dr. Thomas McCrae; "Injury to the Rectum in the Gynecologic Examination," by Dr. Howard A. Kelly; "A Series of Mistaken Gynecologic Diagnoses," by Dr. Thomas S. Cullen; "Invasion of Carcinoma of the Uterine Cervix Into the Surrounding Tissues," by Dr. John A. Sampson; "Is Pneumonia Increasing?" by Dr. John S. Fulton; "A Study of the Economic Course of Consumption in Wage-Earners," by Dr. Marshall L. Price; "Some Typhoid Epidemics Studied by Laboratory Methods," by Dr. Wm. R. Stokes; "The Moral Obligation of the Medical Profession to Solve the Problem of Venereal Diseases," by Dr. Howard A. Kelly; "Thoughts Suggested by a Study of the Eye Injuries of Independence Day," by Dr. Robert L. Randolph; "Sympathetic Ophthalmia," by Dr. Samuel Theobald; "A Summer's Experience With Infantile Diarrhea," by Dr. J. H. Mason Knox; "Dilatation of the Colon in Children," by Dr. William Osler; "The Etiology and Pathology of Gout," by Dr. Thomas B. Futcher; "Bone Cysts—the Benign and Adamantine Dentigerous Cysts of the Jaw and Benign Cysts of the Long Pipe Bones," by Dr. Joseph C. Bloodgood; "The Pelvic Ureteral Sheath and Its Relations to Diseased Conditions in the Pelvis," by Dr. John A. Sampson; "Anatomy of Bartholin's Glands—Cysts of Bartholin's Glands," by Dr. T. S. Cullen; "Regenerative Changes in Cirrhosis of the Liver," by Dr. W. G. MacCullum; "Observations on Motor and Sensory Localization of the Human Cortex," by Dr. Harvey Cushing; "A Bacteriological and Clinical Investigation of a Curative Serum for Typhoid Fever," by Dr. Wm. R. Stokes.

MARYLAND

MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 7 BALTIMORE, JULY, 1904 Whole No. 1034

ANTITOXIC SERUMS IN THE TREATMENT OF DISEASE.

By Harry T. Marshall, M.D.

READ BEFORE THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND ON WEDNESDAY, APRIL 27, 1904.

Our conception of the action of antitoxic serum depends directly upon the views that we may entertain as to the nature of infection and of immunity. At the present time one theory is generally accepted as an explanation of this mechanism. Hypotheses which have been advanced at different times previously attempting to explain these phenomena were no sooner proposed than they were abandoned. Among these discarded hypotheses may be mentioned that one which claimed that the essential feature of infection is a bacterial deoxidation of the blood; that one holding that bacteria act by interfering mechanically with the circulation, and that one which assumed that bacteria deprive the body of the nourishing proteids, and thus, as it were, produce starvation. As discarded hypotheses to explain immunity may be mentioned Pasteur's "exhaustion" theory and Chauveau's "retention" theory. Metschnikoff's phagocytosis theory, however valuable it may be, is not the most satisfactory explanation of the phenomena of antitoxin immunity, and Buchner's "numeral" or "alexin" theory has been altered so fundamentally and extended so widely that it cannot be recognized in the "receptor" theory of Ehrlich, which prevails today.

In 1885 Ehrlich published an article entitled "Das Sauerstoffbedürfniss des Organismus," in which he advanced a hypothesis to explain on a chemical basis the assimilation of food. According to this hypothesis, even after food has been eaten, digested and absorbed and has been passed on into the circulation, it is not immediately available for the nutrition of the organism. In order to be of any value to the cells the food must be removed from the circulation and must become chemically bound to that cell which it is to nourish. For this union to occur it is necessary that the food in the circulation, on the one hand, and the cell to be nourished, on the other hand, shall have mutually attractive chemical structures. In other words, there must be a certain chemical group in the cell which exerts an attraction upon a corresponding chemical group in the foodstuff, and this attraction must be sufficiently strong to draw the food from the circulation and compel it and the cell to unite. When once the food has become anchored to the cell in this way it can be made use of by the cell, being elaborated by the other complex molecules of the cell and eventually being thrown off as waste products.

Ehrlich, then, distinguishes two different sets of chemical molecules in the structure of the cell—one set whose function it is to pick out from the circulation suitable foodstuffs and anchor them chemically to the cell, and a second set which elaborates the foodstuffs thus brought into the cell. The latter set of molecules he calls the "functioning nucleus" (Leistungkern) of the cell. But to avoid confusion with the structure recognized anatomically as a cell nucleus we will call this set of molecules the "central group" of the cell, following the French nomenclature. This "central group" constitutes the greater part of the cell. It is composed of great groups of highly-complicated molecules whose interaction upon each other and upon the foodstuffs is the chemical groundwork for all the vital phenomena manifested by the cell. We have but little definite knowledge of the chemistry of this hypothetical "central group." The other set of molecules has the function of attracting the food to the cell and of receiving it into the cell. Ehrlich distinguishes this group of molecules as the "side chains" or "lateral chains" or "receptors" of the cell. The term "side chain" or "lateral chain" is borrowed by analogy from chemistry, where it is used to designate an unsaturated substitution product of the benzin ring. "Receptor" is applied by Ehrlich to these molecules from the fact that they receive the circulating foodstuffs or other substances to be considered later. It is necessary to suppose that each cell is supplied with many receptors, some of which attract one variety of food, others another. It must also be assumed that at least some of the receptors of one cell differ from some of the receptors of other cells. Thus if we imagine that in the circulation there are a series of foodstuffs—A, B, C, D, E, F, G, H, which differ from each other in the chemical group, by means of which they become attached to the cells—the groups A, B, C may find suitable receptors in the cells of the central nervous system, groups D, E, and F in the cells of striated muscle, groups A, E, and G in cells of bone-marrow, and so on.

This hypothesis was first applied to infection and immunity in 1897 to explain diphtheria poisoning.

As we have seen, Ehrlich assumes that each cell possesses a central group of molecules and a series of receptors with different chemical affinities for the different varieties of foodstuffs which normally occur in the circulation. Now he assumes that as a matter of chance the diphtheria toxin possesses a chemical group which has an affinity like that of one of the circulating foods, with the result that when this toxin passes in the neighborhood of a certain cell its chemical group causes it to become united to the corresponding group of the cell. When once united to the cell the physiological result of poisoning can become evident. If the chemical energy of the toxic portion of the toxin molecule is very great, the life of the cell is destroyed. If, however, the chemical energy of the toxic portion is sufficiently weak, the life of the cell is not destroyed. In this case the cell continues its functional activity minus the aid given by its occupied receptor. The toxin, united to the receptor, is not suitable for use as a food and cannot be eliminated with the normal waste products of the cell, but remains bound to its receptor, rendering it inert, and therefore an encumbrance to the cell. Now, it is a general biological law that the organism tends to rid itself of useless foreign bodies or encumbrances. The receptor, with the toxin anchored to it, is biologically such an encumbrance, and the cell rids itself of the encumbrance by throwing off the receptor, together with the toxin that is bound to it.

However, in the normal physiological existence of the cell this particular receptor is required for the absorption of foodstuffs, and the absence of the receptor constitutes a defect in the cell. As in other cases where a defect exists, the cell tends to repair the loss—that is, the cell reproduces a new receptor identical with the one that was lost. Again a molecule of toxin anchors to the new receptor, again the receptor is thrown off, and again a new one is formed. Now, according to the general physiological law advanced by Weigert, when a process of repair occurs the tendency is for the repair to be in excess of the original defect. Ehrlich assumes that this law holds in the case of the repair of the receptors. Accordingly, the cell comes to possess not one receptor, but several or many receptors identical with the one originally lost. Now, in its normal state the cell requires but one such receptor. Therefore the other similar receptors are useless encumbrances to the organism and are thrown off into the circulation. Such receptors having this definite chemical affinity for some definite toxin circulation in the blood, which receptors have been thrown off from their parent cell and have come to lie free in the circulation, are, according to Ehrlich, the antitoxic substances of an immune serum.

If, now, a toxin be present in a serum in which there are some of these receptors, the toxin will at once be bound to the free receptors and will leave unharmed the cell from which these receptors have originated. This, in short,, is the mechanism of immunity against soluble toxins such as diphtheria or tetanus. It can be seen that the toxin may have an affinity for a free receptor which is either equal to, greater or less than its affinity for those receptors not free in the circulation. It seems probable that in some cases at least the affinity is greater for the circulating receptors than for those remaining bound to the cell.

Ehrlich applies this hypothesis to all toxins which are in a position to form antitoxins. As originally stated, he did not apply this theory to substances with a definite chemical composition, such as alkaloids, etc. As we have seen, Ehrlich assumes that a toxin possesses at least two different chemical groups—first, that group which effects the union between the toxin and the cell or antitoxin, and second, that group which produces the physiological or poisonous effect of the toxin. The first of these groups he distinguishes as the haptophore group, the second as the toxophore group.

To restate this theory briefly, the cell consists of a central group of molecules which perform the functions of the cell, and of a series of receptors which pick up foodstuffs, or toxins with affinities like those of the foodstuffs. The toxins possess two groups—a physiologically active group and a binding group. Infection consists in the union of the binding group of the toxin to the receptor of the cell and the subsequent action of the physiologically active group of the toxin upon the central group of the cell. Immunity is due to the throwing off of receptors which have become occupied by toxin with subsequent new formation and setting free of excessive numbers of such receptors.

Behring has stated Ehrlich's theory as follows: "The same substance which in the living cell is the cause of intoxication is the cause of recovery if it occurs in the plasma."

It may be noted that the formation of antitoxin is really not a part of disease, but represents a process of recovery.

This theory was applied specifically to the case of a soluble toxin and its antitoxin. But there is another and a very important mechanism by means of which the body protects itself against infections. In the case considered the bacterial toxins are neutralized, but the bacteria themselves are not accounted for at all. Now, not only does the body form antitoxins, but it also forms a variety of more complicated substances, whose action is directed not toward the neutralization of toxins, but to the destruction of the bacteria themselves. I need not consider the mechanism of the action of these "bactericidal" substances produced by the body further than to say that their origin and action are satisfactorily accounted for by the receptor. It is, however, important to remember that these two distinct reactions can occur in an immunized animal, one reaction leading to the formation of antitoxins, one leading to the formation of bactericidal substances. This distinction is of more than theoretical value, for it is found that the antitoxin type of immunity can be utilized with much greater success than the bactericidal immunity in the serum treatment of disease.

So much for the general theory of the action of toxin and antitoxin.

Let us now consider briefly the various types of immunity in the light of this theory.

An animal may be altogether insusceptible to the action of a bacterium, even if the bacteria and their toxins are injected into the circulation. This type of immunity, known as racial or natural or absolute immunity, is explained by assuming that the animal has no receptors capable of uniting with the bacterial products. In this case the immunity is in nowise dependent upon any protective action of the serum or plasma of the animal. Accordingly the serum of such an animal affords no protection whatever when injected into animals which are susceptible to the particular bacterium concerned.

A susceptible animal if inoculated with sublethal doses of toxins will develop antitoxin capable of neutralizing the toxin. Thus in the case of diphtheria the horse can be made to develop enormous quantities of antitoxin. If the serum from such an immunized animal is inoculated into a susceptible person, it will afford a very great degree of protection against the disease. This type of immunity, known as passive immunity, will last as long as the antitoxin remains in the circulation. The antitoxins thus inoculated are usually excreted quite soon, so that passive immunity is of short duration. The antitoxic serum may be used either as a prophylactic to prevent infection or as a cure for those already infected. In the last case it is very important to remember that the best result is to be obtained by inoculation of the serum early in the infection, that is, before the toxins have become anchored to the cells of the infected person. If injected early, the antitoxins unite with the toxins in the plasma and prevent union of the toxins and cells of the infected person. The case is quite different if the antitoxic serum is inoculated late in the disease. Here the toxin is already bound to the susceptible cells, and the antitoxins must first abstract the toxins from the cells and then neutralize them. The antitoxins are capable of doing this only to a limited degree. It has been found, however, that if enormous doses of antitoxin are injected, even late in the disease, they exert a mass action and do actually remove some of the toxins even after they are bound to the cells. The dose of antitoxin required for this purpose is much larger than that needed to neutralize the circulating toxin, and the dose required rises in almost multiple proportion according to the day of the disease. The disappointing results with antitetanus serum are due in part to the fact that the serum is not usually administered until so late in the disease that the tetanus toxin has already united with the susceptible nerve-cell.

If an animal is immunized by inoculation with bacteria, the animal will develop a variety of protective substances, antitoxins, bactericidal substances, etc. If a susceptible person is treated with bactericidal serum from an immunized animal, the person will in some cases be furnished with the power of destroying the bacteria concerned. In some cases this result is not achieved, and at the best the bactericidal protection that can be conferred by the use of specific serum is slight compared to the protection afforded by the use of an antitoxic serum. The reason for this is that the bactericidal serum requires to be, as it were, reinforced or completed by substances in the blood of the person injected. The amount of such reinforcing or completing substances in the blood is not very great, and it usually happens that only a part of these substances are available for aiding the bactericidal serum which has been injected. Whether the infected person can utilize the bactericidal substances depends upon a number of circumstances—the peculiarity of the individual, the similarities or differences between the blood of the individual and the blood of the species furnishing the bactericidal serum, the amount of bactericidal serum injected, and so on. We have still much to learn before we can expect any great success from the employment of the bactericidal serums. It seems probable that we may expect the best results if animals which stand close in the scale to human beings are made to supply the serum, and if several species of animals are immunized and the serums are mixed and then used for inoculations.

THE ETHICAL RELATIONS OF THE DOMINANT SCHOOLS OF MEDICINE.

By Eldridge C. Price, M.D.

ANNUAL ADDRESS OF THE PRESIDENT OF THE MARYLAND STATE HOMEOPATHIC MEDICAL SOCIETY, DELIVERED MAY 17, 1904.

BACK of the various codified rules of ethics, and as a foundation upon which they all rest, is the general science of human duty which should control the conduct of all civilization, and which may be expressed in the phraseology of the golden rule, "As ye would that men should do to you, do ye also to them, likewise."

This is a wholesome rule by which to be governed in our relations with our fellow human beings, because its application is beneficial to the mass of humanity and to the individual. The day of its consistent practice by the human race would be the first day of the great millennium of peace of which we have so often read. We are, however, not yet threatened by this sublime epoch, for not only must the ethnic world change, but Christendom must be practically and consistently Christianized and sociologically enlightened. Nature's fundamental law of self-preservation is yet the prime motive which governs all classes of society from the street fakir to the theological adept. It is, therefore, not remarkable that the medical profession sometimes forgets to regulate its conduct in consistent accord with the golden rule. Did it do so there would have been no question between the two dominant branches of the profession as to mutual exchange of consultations and qualifications for fraternal association.

In the year 1847 the American Medical Association adopted a code of ethics which declared that "no one can be considered as a regular practitioner or a fit associate in consultation whose practice is based on an exclusive dogma to the rejection of the accumulated experience of the profession and the aids actually furnished by anatomy, physiology, pathology, and organic chemistry."

This code remained in force until May, 1903, when the American Medical Association adopted as its ethical guide what it officially terms "Principles of Medical Ethics," and in which there is nothing to prevent the members of that organization from consulting with homeopathic practitioners.

Apparently a long stride has been taken in advance by the leading and representative organization of the older branch of the medical profession in this country, but when we stop to consider the fact that while the members of the American Medical Association are now permitted to consult with practitioners of homeopathy, they are not required to regard such practitioners as their equals in breadth of education, in honesty of purpose, nor in therapeutic ability, we can but question this alleged evidence of progress.

The members of the older school of medicine may be divided into classes—those who are animated by the spirit of 1847, and those who are animated by the spirit of 1903. Of the two I am not at all sure the former are not safer and more honest than are many of the latter; for they are *outspoken* in their wrath against all things that are not strictly consistent with the orthodox standards of their fathers.

In the days when the old code was first adopted the rank and file of the homeopathic school in this country was certainly not composed of persons who could be regarded as properly educated in medicine. In many instances they were quite illiterate, having come from some humble walk in life not at all calculated to prepare them even for the study of the few books with which they supplied themselves as their sole source of medical education.

It is no great wonder that the men who were thoroughly educated in the best schools of the day should have discriminated against those whom they knew to be so little qualified for the dignified position physicians were supposed to hold. That there were some properly-qualified physicians, however, among the early practitioners of homeopathy in this country is true, and that the action of the American Medical Association was a hardship for these men is also true; but when we take into consideration the fact that there were a large number of illiterate book-and-box medical tinkers, who were generally accepted as representative of the homeopathic profession, and when provision was made in the code of ethics of the American Institute of Homeopathy for the recognition of these very persons in consultation with members who were thoroughly educated in general medicine, and, in addition, really qualified to represent homeopathy, then there is nothing very surprising in the action of the American Medical Association. The mistake was, however, that *all* alleged practitioners of homeopathy were debarred from the American Medical Association. Proper discrimination could and should have been made. This lack of discrimination was neither wise nor just, and it is not unnatural that the educated homeopathic practitioners should resent having been classed with cobbler-doctors and blacksmith-doctors and the whole quackish group that in the past posed as homeopathic physicians.

The day of the significance of this wholesale ostracism, however, has long since passed, for the homeopathic practitioner has grown careless of whether or not his older brother recognizes him officially. He cares little whether he may join orthodox societies; he has become self-sufficient, and has within his school those who are the equals in educational qualification, experience and skill of the men in the same lines of work in the older school. What difference, then, does it make at this late day whether or not the American Medical Association decides that he is fit for membership or for consultation? He does not seek to place himself in a position where his views may be subjected to censorship, and certainly he will not allow himself to be suppressed and prevented from confessing his belief in anything his common sense and judgment may sanction. He is as good a judge of the sanity of his views as is anyone else, especially if his critic be one who has not made a thorough study of the subject of his criticism.

The age of this fight for a right to one's opinion is counted by decades of centuries. In this day of progress it is somewhat absurd, not to say wearying, to educated men to have their opinions corrected or ridiculed by men no better educated, and in this consideration of the present status of medical ethics we care little for the opinion of our self-constituted judges; it is to have our position clearly defined that concerns us.

Homeopathy has long since passed the experimental stage, and we refuse longer to submit to the unnecessary and gratuitous indignity of the witness-box or the pillory in its behalf. The dictum of the representative "homeopath" is clothed with no less *ex cathedra* authority than is the dictum of the representative "allopath." The right of homeopathy to consideration does not rest upon a foundation of rare cures of self-limited conditions by "high potencies." Its truth and accuracy have been demonstrated by the use of material doses of well-known drugs. Neither are the believers in and practitioners of homeopathy illiterate, or in any manner differently constructed mentally, or inferiorly equipped educationally from the average well-educated practitioner of the dominant school. The representative "homeopath" of today is one with a good general medical education, to which he has added a knowledge of the homeopathic use of drugs. He has the right to use, and does use, any means his judgment may sanction for the healing of the sick, for the best good of his patient. As Dr. D. W. Cathell, in his paper read before the Medical and Chirurgical Faculty of Maryland not long since, says, the homeopathic profession consists of a "body of educated men, physicians under the laws of the various States, men of good professional character, correct morals, and much esteemed by those who know them best."

In this address Dr. Cathell has voiced the sentiments of a large number of his brethren. Without entering into a detailed examination of this essay, it is sufficient to say that its object is to advocate the recognition of homeopathic practitioners as in good ethical standing, provided that the "homeopath" is willing to drop the "sectarian name."

In the meantime the discourse breathes a spirit not quite consistent with modesty or with the genuine fraternal feeling for the brother whom its author would welcome back into the fold from which he has been excluded for so long a time. He says: "We non-sectarians, with our boundless field of therapeutics, naturally stand on a broad vantage-ground and see much to contemn in our opponents; but, gentlemen, withal, let us be modest in our claims, for we ourselves are not scientifically perfect, our enemies still find much in us for criticism, and there is not a specialist or surgeon or consultant of any kind anywhere who does not discover by actual experience that ignorance of this or that medical truth is not confined to irregulars."

On the question of consultation with homeopathic practitioners Dr. Cathell gives expression to his views as follows:* "As to the moral aspect of mixed consultations, what physician does not come in frequent contact with the vile, the vicious, and the ignoble? Is anyone thereby necessarily contaminated? Not at all. Would it not be equally foolish, or even more so, for anyone to say that if a well-qualified physician gives his advice or his aid to an ignorant one, or even to a medical fool or knave, and thus aids him in preventing suffering or in saving life, he thereby necessarily descends to that man's level or degrades our noble calling? To all such assertions I would answer—No! In the name of God—No!"

Do these expressions breathe such a spirit of welcome that we feel impelled by their sincerity to rush into the arms outstretched for us? Suppose we were to accept this invitation in good faith, providing it were officially endorsed, and become members of either the Americal Medical Association or of the Medical and Chirurgical Faculty of Maryland, would we be permitted to discuss homeopathy at the meetings of these organization and enter freely into an account of the homeopathic treatment of our cases? Would we not, as a matter of fact, be expected not only to drop the "sectarian name," but also to refrain from all mention of the practical application of homeopathy, or even to give expression to a belief in the law? Would we not feel ourselves among men who consider a belief in therapeutic law of any kind exceedingly "bad form," and would we not be looked at askance or possibly even treated with polite forbearance as persons of peculiar mental organization, or even as mental invalids?

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*In justice to Dr. Cathell be it said that in a telephonic conversation with him since the delivery of this address he disclaims any intention of applying this paragraph to homeopathic practitioners. It is unfortunate, however, that the author of the essay did not so couch his remarks as to leave the reader in no doubt as to his meaning.—E. C. P.

Until we are sure of such points we are willing to be excused from the honor. We have had too many successes, and have grown to be too dependent upon homeopathy, to lend ourselves to its betrayal in this manner; for the acceptance of the favor of our older brothers, according to the gospel preached by Dr. Cathell, would mean nothing less than the engulfing of our faith in the great ocean of Dr. Cathell's superior kind of wisdom. That this engulfing is the purpose of the change in the ethics of the American Medical Association we are led to believe by Dr. Cathell in the statement of his belief that the restriction exacted by the old code was "an unwise method of dealing with the homeopathic portion of our foes, and one that had the directly opposite effect from that which was intended." He then goes on to show the surprising growth of the homeopathic school and its institutions, and concludes by stating as his belief that this growth is due to what "all our enemies forthwith stigmatized as 'persecution.' "

If, therefore, homeopathy has grown to such proportions in the last century—as has been shown by Dr. Cathell—because of the restrictions of the old code, then, *per contra,* if these restrictions are removed, it is quite logical to conclude that this undesirable growth will cease, and homeopathy will become a mere name without practical significance. Such, doubtless, is the view and the hope of those who unite with the essayist in advocating this method of exchanging "the tomahawk for the olive branch."

There is a small contingent of older-school men who are really honest in their antiquated ideas. The type of this class is no clearer as to what constitutes a homeopathic practitioner than are many homeopathic practitioners as to what constitutes an "allopathic" practitioner. The definition of the latter might be expected to be about as follows: "An 'allopath' is a man who has a degree from a college where homeopathy is *not* taught, and who usually belongs to a medical society where homeopathy is *not* rationally discussed." The definition of the other might be expected to be, if he be good-natured: "A 'homeopath' is one who has a degree from a college where homeopathy is taught." While some "homeopaths" might be able to give a more intelligent definition of what constitutes an "allopath," yet few "allopaths" could give a much clearer definition of what constitutes a "homeopath," unless possibly they add, "One who gives insignificant doses of medicine."

It is astonishing, in this supposedly enlightened day, that some of these well-educated physicians of the older school should have such almost fantastic ideas of the position of the homeopathic school, as, for example, that we should necessarily restrict ourselves to the practice of homeopathy as taught by Hahnemann, never availing ourselves of any other measures of any nature whatsoever; that the world of therapeutics is *not* open to all men, but only to those who deny there is anything in homeopathy; that all dilutions of drugs beyond possibly the second or third decimal dilution are mere placebos, and the prescription of such preparations is but the practice of simple expectancy. These gentlemen ridicule the idea of infinitesimal drug influence as a proposition too absurd to be considered. They are angered at the idea that one who practices homeopathy should ever use a dose of crude medicine, should palliate or avail himself of anything but infinitesimal doses, and declare that they cannot understand the mental construction of one who can for one moment believe homeopathy is anything but a delusion. They apparently do not recognize the difference between the resisting power of a healthy organism and the sensitiveness of a diseased organism, and that this sensitiveness is beyond computation in degree of resisting power; that what will produce a profound effect upon a diseased organism may not affect a healthy organism in the slightest, and that what is required to cause a definite effect in a healthy organism may work disaster in one weakened by disease. Apparently they do not recognize that this difference in resisting power is a matter of fact, and not a theory, and should be reckoned in the use of drugs.

This type of "allopath" will grant the homeopathic believer nothing. He asserts that the homeopathic practitioner only produces definite results with drugs when he prescribes crude drugs in the same manner as the older-school practitioner. He classes us with faith curists, christian scientists, *et id omne genus*, when he has not made an impartial study of homeopathy, and is therefore not prepared to judge. He has read various writings about homeopathy, but he has never studied the homeopathic relationship of drugs to disease in an impartial manner as one seeking to know the truth, but as a cynic and as one whose purpose is to prove his theory. He is not aware that homeopathy may be demonstrated through the use of crude drugs as well as through infinitesimal doses of drugs. He does not know that in this day the physician should know how to apply drugs by each and every effective method, and that unless he knows and does this he does not do his duty by himself or his patient—he ignores the spirit of the golden rule. He does not know that the effects following the prescription of diluted drugs are not necessarily always due to expectancy. A study of Pettigrew, Spencer, Ribot, Beard, Tukes, Gates, and other psychologists has put the "homeopath" into possession of knowledge whereby he may differentiate possible results of diluted drugs from possible results of pure credulous expectancy.

In the early days of homeopathy little was known of psychology, and hence the early promoters of the system were not infrequently misled. They were easily deceived, as were all scientists in those days, and as a result their mistakes and overzealous statements have done much to retard the serious consideration of the claim that there is such a thing as a principle of similars, through the application of which the sick may be cured. Since that day, however, the world has grown, but these conservative gentlemen do not seem to know it.

The men who so severely criticise us may be really sincere, but they are too narrow to grasp the full possibilities of therapeutics, confessing that they do not believe in such a thing as a law of therapeutics. Such men really do live in Baltimore today.

There are, however, many members of the older branch of the profession who are far more liberal (and among whom I am sure I have some very good friends), and who really are sincere in their desire for an official reconciliation with us, and I feel confident that these gentlemen would enter into any plan that might give reasonable promise of an amicable adjustment, and in the process of such a reconciliation they would undoubtedly desire that the terms be equally fair for both parties concerned.

A reconciliation of this character would have for its foundation a knowledge of what constitutes the progressive elements of both schools; and especially would it be understood that a progressive homeopathic physician is not a sectarian, that he is one who has studied all the methods of healing the sick that give promise of effectiveness, that he understands that homeopathy does not regulate the affairs of the universe, or even of the whole field of therapeutics, but that, like all other laws, its sphere is limited. It would further be understood that, in common with the members of the older school, the homeopathic practitioner also endeavors to remove the existing cause of disease before undertaking to relieve its effects; that he is free to use all drugs and methods of cure that his judgment may sanction; that he, too, shares the "boundless field of therapeutics" in common with his older brother, and also stands on the same "broad vantage-ground;" that he does not claim to limit his practice within the sphere of homeopathy; and, finally, it would necessarily be recognized that the only difference existing between the modern liberally-educated physician of the older school and the modern liberally-educated homeopathic practitioner is that the former has not studied homeopathic therapeutics systematically, and, therefore, cannot apply them intelligently, and the latter has studied homeopathy systematically, and is prepared to intelligently prescribe drugs according to this method when the conditions to be relieved come within the sphere of applicability of the law of similars.

When these facts are clearly understood, and the "homeopath" is treated as any other educated doctor of medicine, and not as a mental pervert, then, with few exceptions, he will be ready and willing to drop the "sectarian name." He will not expect the "allopath" to accept all his therapeutic views, nor will he be expected to accept all the therapeutic views of the "allopath" any more than the individuals of each school accept all of each other's individual views, but as he is willing to grant his brother the right to individual opinion, so he expects the same right for himself.

There are today many practitioners in our school who have not for years attached to their names any distinctive adjective by which one could guess at their therapeutic belief. Some go farther, and do not even claim to be "homeopaths." They are practitioners of medicine, who reserve the right to apply what they believe to be for the best good of the patient, and include in their armamentarium the means furnished by homeopathy, by antipathy, and by allopathy.

This mutual recognition of the right to freedom of thought and rational action must exist before a reconciliation can be established, and even then it must be understood that the "homeopath" will reserve to himself the right to have his special organizations for the study of special subjects, homeopathy among them, just as men who compose our national bodies are members of smaller organizations whose purposes are for investigations in limited fields.

If those whose sentiments Dr. Cathell so clearly expressed in his address are really desirous of the reconciliation so ardently advocated, then will they gladly accord us the rights we are willing to accord them; and with a large number of representatives of both schools of the same mind, there is no reason why an organization should not exist in Maryland within whose pale all physicians in good educational and legal standing may fraternize on a plane of equality. Or if the policy of the Medical and Chirurgical Faculty of Maryland were now to be recast in such a liberal mold, there is no reason to doubt that to its membership would, in a reasonable time, be added a goodly number of those whose views have heretofore debarred them from the privilege of association with medical practitioners who have never been, and never will be, more than their equals in the medical profession.

Upon such terms of equality, and such terms only, can a dignified, just, and honorable fraternization of the two dominant schools of medicine be established. Then will it be that *contraria contrariis curantur* and *similia similbus curantur* will be emblazoned side by side in the temple of Esculapius, where all who have attained the dignity of the physician may be free to enter, regardless of individual opinion, and where all who enter respect and honor the code of duty by which each mutually governs his conduct, for this code will have had shorn from it all that can be used to injure a worthy brother, and which will breathe only the spirit of the golden rule: "As ye would that men should do to you, do ye also to them, likewise."

Current Literature.

THE DETERMINATION OF RENAL CAPABILITY: ITS PRESENT STATUS.

By John W. Churchman, M.D.

THE indispensability to the human organism of a certain degree of function capacity on the part of the kidneys is a physiological and clinical truism, and the surgery of the kidneys is therefore the surgery of a paired organ; for it is obvious that, in view of the great importance of the kidneys and of the inability of any other organ to fulfill their function, radical operation on one side ought never to be undertaken without careful consideration of the "sound" side. If gross disease exists there, too, gross methods suffice for its determination, and physical examination, together with urinary analyses, actinography, and cystoscopic examination of the ureteral orifices, may give in this case the needed information. All these procedures, however, as well as subsequent exploratory examination of the "healthy" kidney, may leave us absolutely in the dark as to changes in the kidney tissue, which, though inappreciable by grosser methods of examination, may greatly impair the capacity of the organ to do its work, and in this indirect way influence the prognosis of operations done on the diseased side. It was to detect these finer, but no less important, changes that measurement of function capacity was undertaken—no very novel procedure, indeed, for the idea had been suggested by Virchow even before it was applied by Rossenbach to the work done by the heart and stomach. The kidney, however, having come in somewhat later for its share of attention, determination of renal capability is a matter of more recent years and of greater present interest, and enough experimental and clinical evidence has now accumulated to warrant an appraisement of the method.

Whatever be the value of functional diagnosis, it is obvious that the need for careful preliminary urinalyses, made in the ordinary way, is by no means done away with; for, though negative findings as to albumen and blood and casts and organisms may be of little value, positive findings, though giving us no accurate idea of the extent of kidney involvement, warn us against expecting a perfectly normal organ.

The time-honored procedure for informing ourselves as to the ability of the kidney to do its work is the determination of the urea excreted, and the Doremus apparatus, which transforms urea into nitrogen by contact with sodium hypobromite (the gas being measured directly), is the one most often used. The question first to be answered is this: Has the urea determination any clinical value? The most obvious reply is that the ordinary Doremus procedure does not measure the urea at all, or, rather, measures a good deal more than the urea—possibly as much as the total nitrogen of the urine. An accurate method for determination of urea alone is, indeed, known, but its great difficulty makes it useless clinically, and the question becomes, therefore, one of total nitrogen output. We have to ask: Has determination of this quantity any clinical value? Normal daily variations obviously make single determinations misleading, and the wide limits of the so-called "normal output" make it clear that wide variations may occur in kidneys which are doing all the work required of them. But even within these limitations we are not warranted, when we have found a marked diminution in nitrogen output, in inferring that the function capacity of the kidney is subnormal, or in inferring normal secretion when the nitrogen output is normal, for the following reasons:

1. *Maintenance of the N. equilibrium* does not necessarily speak against retention of N., for katabolic processes in the body may have compensation for a retention of N., the equilibrium being thus maintained and no excretory disturbance suggested by the N. determination.

2. *Deficiency in the N. output* does not necessarily mean retention of toxic products; it *may* mean that the albumen of the food is in great part being built up into body proteids, and therefore is not appearing in the excreta.

3. Even in diseased kidneys there are sometimes alternating periods of scant and of copious N. elimination, and there is no possible way of telling whether our determinations represent the average state of affairs or not.

4. N. retention has been observed in normal kidneys, an apparent accumulation occurring, and the N. later being excreted in quantity.

The routine "urea" estimation, then, does not measure urea, but a good deal more than urea. It has no value as a method of precision unless continued over relatively long periods, and even then it gives only rough indications, which may, in fact, be quite misleading. Nevertheless, it is by no means to be disregarded; it has the clue-giving value of all rough methods, and Kummel has found it in a general way to agree with cryoscopy.

But the problem may be attacked in another way. We may neglect the normal circulation of material through the body from food to excrementitious end-products, and introducing into the organism some artificial substance, easy of detection in the urine, judge of the kidney capacity from the way this material is handled. Potassium iodide, subcarbonate of iron, ferrocyanide of potassium, rosanilin trisulfonate of sodium, and sodium chloride are some of the substances that have been used for this urpose, but the detection of each of these requires long and delicate urinary analyses, and their clinical value is not a practical one. Two injection methods have, however, found a certain vogue. In the first phloridzin—a glucoside from the root bark of certain trees—is used. From it glucose is separated during the course through the body, and this substance is, of course, easily recognized in the urine. The technique is quite simple. The phloridzin is made into a solution with an equal part of sodium carbonate, and 5 mg. of this liquid (10 mg. for very large patients) are injected subcutaneously. The bladder is previously emptied. In *normal* cases sugar appears in the urine in one-half hour, the two kidneys react alike to the drug, and the quantity of sugar does not fall much above or below 3 per cent. Just where the separation of glucose from the glucoside takes place is not known, but the normal excretion of phloridzin probably requires *both* normal renal parenchyma *and* normally-permeable membranes between the blood and the urine in the kidneys, while the methyl-blue test gives information only with regard to the renal permeability. The results obtained by this method are by no means without their contradictions, but in a general way it may be said that disease is indicated by—(1) absence of sugar in the urine after a reasonable interval; (2) delay in the appearance of sugar; (3) a small percentage of sugar. The following are the *average* results reported in a series of cases studied by this method:

Normal Kidneys.—At end of first half-hour about 45 per cent. sugar; at end of second half-hour about 39 per cent. sugar.

Diseased Kidneys.—At end of first half-hour about 23 per cent. sugar; at end of second half-hour about 23 per cent. sugar.

The second injection method, introduced by Achard and Castaigne in 1897, is equally simple in its technique. Methyl blue is the substance used in this case, and 1 c. c. of a sterile 1-20 solution of it is injected deeply into the buttocks or thighs, the bladder having been previously emptied. The urine is collected every half-hour until the blue appears in it, and then every two hours until it disappears. The methyl blue appears in the urine either in its original form, when it may be extracted by chloroform, or as a stable leuco-derivative (chromogen), which remains behind after extraction, and which turns green by heating with a little acetic acid.* Deductions as to the excretory power of the kidney are made from the time of appearance, the duration of presence, the intensity of manifestation, and the manner of excretion of these two substances. The method is, of course, subject to certain limitations. It must always be done with ureteral catheterization. It does not give results which coincide with similar methods in which different chemical solutions are injected, for each of these has its own coefficient of elimination, depending not only on the quality of the filter, but on the nature of the substance to be filtered as well. Yet it seems probable that in a general way the coefficient of elimination of methyl blue gives an index of the elimination of excrementitious and toxic substances (provided the kidney condition be a local one), but this is only *in general* true, though, fortunately, it seems to be *most* true when the kidney is *most* diseased.† The method, of course, gives no idea as to the histological type of the kidney change, but normal elimination never occurs with an abnormal kidney, and *vice versa*. The average normal condition is for the methyl blue to appear in the urine during the first hour. Elimination increases progressively, the maximum being reached in several hours, and diminishes regularly, to disappear in 36 to 48 hours. The blue and the chromogen run a roughly parallel course, but the quantity of the latter is always less than that of the former. In the majority of cases a variation from the normal in the elimination of these two substances means some modification of the renal secretion, but the following elements in elimination must be studied in connection with the clinical features before a conclusion can be reached:

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*There is probably also a second unstable leuco-derivative which is due to fermentation and occurs always in alkaline urines.

1. Intensity of elimination, which is the most important feature. In general elimination in *large* quantity means a permeable kidney, in small quantity an impermeable one.

2. Time of appearance. This has only a relative value. The appearance is usually delayed with impermeability.

3. Duration of elimination. Compensatory hypertrophy apparently prolongs it.

4. Course of elimination. Definite excretory types (cyclic, polycyclic, and intermittent) have been observed, but the course is extremely variable, and the different types have apparently no constant significance.

The last method for estimating the excretory powers of the kidney consists in a determination of the molecular content of the urine by measuring its freezing-point and comparing this with the freezing-point of the blood. This procedure rests for its logical basis on purely physical grounds, and Raoult and de Coppet, in announcing the following laws, made possible the method of cryoscopy which Koranyi, and later Lindemann, subsequently applied to medicine: 1. All substances (whether solid, liquid, or gaseous) when dissolved in a liquid lower the freezing-point of that liquid; 2. The lowering of the freezing-point is proportional to the amount of substance in solution; 3. When a molecule or a proportional quantity by weight of any substance is dissolved in a constant quantity of water the freezing-point is lowered a definite amount; 4. When various different substances are contained in the same solution the freezing-point of the solution is lowered an amount equal to the sums of the freezing-point of each substance contained in the solution. The relation formulated by Van't

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†Except that the method shows practically the same functioning capacity for the two kidneys in cases of renal neoplasm.

Hoff between isotonicity, molecular content, and freezing-point showed that when we measure the freezing-point of a solution we get an absolute index of its osmotic pressure. Exceptions to these rules have been explained by introducing the ion conception (D'Arrhenius) and supposing that in complex solutions complex molecules are formed, with a diminution in the molecular content and no proportionate effect on the freezing-point. The technique of the method is comparatively simple. The fluid to be tested is put into a large test tube, which fits into a larger glass air chamber suspended through the top of a jar. Into the test tube runs a finely-graded thermometer and a long wire with which to stir the liquid. The jar is filled with a freezing mixture of salt and ice, its top containing the air chamber, with test tube within, replaced, and the liquid continually stirred. As the temperature in the air chamber falls so does that of the liquid in the tube within, and the drop is registered by the thermometer. At the instant the liquid freezes latent heat is given off, and the mercury, which had been continually falling, suddenly rises, the point from which the rise begins being, of course, the freezing-point for that fluid. The instrument (Heidenhain's modification of Beckmann's original apparatus) is accurate to about 1-1000 of a degree. It is easy to see that variations in the water intake and in a whole host of uncontrollable factors would influence the findings of a method which depends on the molecular content of the urine; but, fortunately, only relative values are wanted, and experiments have shown that urine from healthy kidneys always has a lower freezing-point than that of diseased kidneys, except when great dilution following the ingestion of large amounts of fluid is present. Urine normally freezes between —0.9° and —2°. A freezing-point above —0.9° means renal insufficiency. Blood normally freezes at —0.56°; a freezing-point below —0.58° means renal insufficiency. Here, again, contradictory findings have been often recorded, and we can only say that cryoscopy gives results which are in general trustworthy, its chief advantage being the fact that it gives an index of the total waste products excreted by the urine instead of that of a single constituent.

What, then, is the status of functional diagnosis? Are the methods necessary? Are they practicable? Are they reliable? Are they safe? Their necessity is surely quite limited, for cases demanding nephrectomy are not every-day cases, and where such a procedure is really required general clinical considerations and gross urinary examinations often give data enough to warrant an operation which would in any case only be contraindicated by the most certain and positive findings. The most practicable method is too gross to be called a procedure of accuracy, and urea determination, though of rough value and having a place in routine examinations, are really different in kind from the other methods described and should be considered separately. The "accurate" methods are by no means simple undertakings; they involve a large amount of time and work; and it may be questioned whether the contradictory, sometimes misleading and always uncertain, indications which they afford have enough value to warrant this outlay. Moreover, ureter catheterization,* though warrantable and necessary in certain cases, is not a procedure to be undertaken with impunity, particularly through an infected bladder into a hypothetically clean ureter leading to a possibly healthy kidney. It is not the simplest procedure in the world either for patient or surgeon, nor is it the safest. And its usual simplicity and safety are certainly not at all increased when the ureters have not simply to be catheterized, but to be drained, the patient lying for periods measured by half-hour units with a catheter in one or both ureters. Yet cases now and again occur in which we *must* know the condition of the functional capacity of the kidney, and we must then use the only method at hand, unsatisfactory though that be. Here cryoscopy seems to offer most. Its results have been found at least as constant as those of any method, and it involves, so far as the patient is concerned, no risk which ordinary single, and not prolonged, ureter catheterization does not itself involve. The statistics of the subject seem to point to the value of routine employment of functional diagnosis. Casper and Richter, employing the freezing and the sugar methods, reported 20 primary nephrectomies, with two deaths, or a mortality of 10 per cent. (excluding one of the deaths, which was from diabetes, a mortality of 5 per cent.). In the 1118 nephrectomies of the last 30 years in which functional diagnosis was not employed the mortality was 26.9 per cent. Israel has lost 28.5 per cent. of his cases, and Küster 28 per cent of his, both operating without accurate determinations of kidney capacity. But it must be remembered that operative mortality is not the only or the decisive feature in deciding upon operation in every case, and if a patient is manifestly dying with extensive one-sided kidney disease, it is better to operate with a greater risk than to do nothing because notoriously uncertain diagnostic methods point to some, possibly to great, diminution of functional capacity on the healthy side. And this is particularly true when we remember that, though we do know that the body can get on with a greatly-diminished amount of functioning kidney tissue, we do not know, until we have tried it, that the kidney tissue in a given case is so much diminished that operation is sure to be fatal, and the experiment is certainly worth trying in cases otherwise hopeless. In other words, where nephrectomy is indicated by the findings on the diseased side it would not usually be contraindicated by findings of changes on the "healthy" side not extensive enough to be detected by the ordinary gross urinary examinations.

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*The controversy as to the possibility of abandoning ureter catheterization for segregation cannot, of course, be entered into here.

There may, of course, occur border-line cases in which one must say that though disease is present, it is not extensive enough to warrant any operation, or, on the other hand, that though disease is not extensive enough actually to demand it, nephrectomy is wise; and in these cases a knowledge of the condition of the other kidney may be of value, no operation being done when the functional capacity of the remaining organ is much diminished, and a nephrectomy being done when the functional capacity is normal or nearly so. When the problem is to decide between a nephrotomy and a nephrectomy the decision must often be reached independent of the condition of the other side. Possibly it must always be so reached if the observations of Koranyi are substantiated, who, working with the phloridzin method and cryoscopy, found the fistulous fluid from nephrotomized kidneys to be more like a transudate than like urine, as though nephrotomy itself caused actual disintegration of kidney substance and availed little more to the excretory equilibrium than removal of the organ.

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The literature of functional diagnosis is already quite large. Casper and Richter's monograph ("Functionelle Nierendiagnostik mit besenderer Berücksichtigung der Nierenchirurgie," Berlin, 1901), which deals exhaustively with the whole subject, gives a particularly good account of the status of *urea determination*. *The methyl-blue method* is discussed in detail by Albarran and Bernard ("La Perméabilité Rénale Étudiée par le Procédé *du Bleu* de Méthylène dans les Affections Chirurgicales des Reins," *Annales des Maladies des Organes génito-urinaires,* No. 17, 1899, p. 337). For an account of the *Phloridzin method* see *Boston Medical and Surgical Journal,* Vol. CXLVII, No. 23, December 4, 1902 ("Some Observations Upon the Value of the Phloridzin Test for Estimating the Functional Capacity of the Kidneys—Renal Sufficiency," Watson and Bailey). *Cryoscopy* is well discussed in the *Johns Hopkins Hospital Bulletin* for 1903 ("Cryoscopy as an Index of Renal Insufficiency in Surgical Disease of the Kidneys," M. B. Tinker). Karo has published a useful discussion of the subject, with especial reference to the freezing and sugar methods, in *Monatsberichte für Urologie,* Bd. IX, Hft. I ("Zur Trage der functionellen Nierendiagnostik").

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

MEETING HELD APRIL 1, 1904.

The meeting was devoted to a discussion of appendicitis, Dr. J. C. Hemmeter treating the medical side of the question. He first referred to the fact that the truth about appendicitis had been learned largely by American surgeons, and he quoted several very flattering foreign opinions of Reginald Fitz. Many fanciful explanations have been advanced to account for appendicitis, Vancott suggesting that terminal arteries in the appendix may explain the origin of the disease, and others explaining it by supposing nerve degenerations to occur. The simplest, though probably not the entire, etiology consists in the anatomical features of the organ, for we have here a small gut closed at one end. Many cases of appendicitis are catarrhal throughout, and these get well. The two forms which are not surgical at all are catarrhal appendicitis and appendicular colic, the latter being not an inflammation, but a muscular effort to get rid of a foreign body. In these cases fever is not present, the swollen appendix can be palpated, and the patients recover under medical treatment. In the ulcerated cases, the cases with abscess or obstruction, the fulminating or peracute cases, and the chronic cases treatment is essentially surgical. The Germans, however, aspirate the abscess cases for diagnostic purposes, and the subsequent history of some of these which did not come to operation shows that abscess absorption is possible. Curiously enough, at the international congress in Paris Tuffier and other surgeons advised conservative treatment in the early stages, while Potain and the clinicians advised surgical treatment. How should we treat a case of appendicitis medically? First, only that food should be given which is absorbed in the intestine, gives sufficient caloric value, and does not reach the appendix. A jelly made with Rhine wine answers these demands, and it is particularly important to warn against the use of milk; secondly, pain must be controlled, and it is best done by morphine in doses too small to destroy tenderness, and in that way mask the symptoms. The advisability of rectal feeding is not altogether proven, for antiperistalsis undoubtedly occurs, as can be proven experimentally. Fitz and Sahli advise the use of leeches, and it is certain that ice bags externally are of value. Dr. Winslow discussed the differential diagnosis, starting from the thesis that appendicitis is in every case a surgical condition. When a patient previously in good health is taken with abdominal pain—often following some indiscretion of diet—fever, vomiting, diarrhea, or constipation, we think naturally of appendicitis and the conditions which simulate it. If the case is one of simple colic, temperature is absent, pulse is low, there is no rigidity, the pain is in the small intestines and is relieved by abdominal pressure. The symptoms in this case, so far from increasing, gradually diminish. In gallstone colic the pain is higher up, the bladder may be palpable under anesthesia, and jaundice is in many cases present. Intestinal perforation is often diagnosed from the symptoms previous to the acute attack, and in case of typhoid fever, by the Widal reaction. In females the ovaries and tubes have always to be thought of, and in any case of peritonitis the probability is fairly strong that the appendix was the original source of trouble. Enteroptosis is sometimes a confusing condition. Surgical treatment should be instituted immediately, but Ochsner's method may be of value in the late-early and in the early-late cases.

Dr. J. L. Hirsch discussed the pathology of appendicitis, referring first to anatomical considerations. The appendix appears about the tenth week of fetal life, and is in all probability due to retarded development. It is usually situated behind the cecum, pointing towards the spleen, and the failure of its artery to run as far as its tip may have clinical importance. The predisposing causes to its inflammation are its structure, its short mesentery, and possibly the rheumatic diathesis. The exciting causes are foreign bodies and micro-organisms, pins, worms, and concretions having been found in about 7 per cent. of 14,000 cases analyzed by Mitchell. The colon bacillus, the pyogenic cocci, tubercle bacillus, and the actinomyces are the organisms most often found. Pathologically, there is only one form of appendicitis, the acute infective type, but the cystic, the parietal, the gangrenous, and the perforative form may be distinguished clinically.

Dr. J. D. Blake favored immediate surgical intervention when the diagnosis was made, but the difficulty of the diagnosis was illustrated by a case of his who died of multiple liver abscess following appendicitis, her case having been thought to be typhoid fever, tuberculous peritonitis, or actinomycosis of the liver. Dr. Atkinson referred to the value of the leucocyte-count in making the diagnosis early, though he admitted that in many cases it was of no help whatever. He also referred to the confusion in diagnosis which may be caused by perinephritic abscess and by retroperitoneal glands. Dr. Watson said that in his experience as a general practitioner he had found it wise to refer cases of appendicitis to a surgeon immediately, and his general rule was always to send his cases when there was increase of any symptom, whether pulse or pain, or what not. He had never had any cases operated on too early, but he had several operated on too late. One patient of his was seen in the evening with suspicious, but not marked, symptoms. He decided to wait till morning. She passed an exceedingly good night, sleeping naturally and without pain, and was quite comfortable next morning. Her pulse, however, had risen slightly, and on that indication she was referred to the surgeon, who found an appendix in very bad condition.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD MARCH 7, 1904.

Dr. McCrae exhibited medical cases. The first was a patient showing the early acute stage of arthritis deformans, which in the Johns Hopkins Hospital is thought, in all probability, to be an infectious disease, its late manifestations being too often considered and its early non-degenerative form being overlooked. Patient was a man of 21, in perfect health and with good previous history. In December, 1903, he had first noticed creaking and slight pain in the knee. There was also some pain and disability in the other knee, the ankles, the shoulder, and the fingers. General health was excellent, and most of the joints cleared up, leaving behind a somewhat thickened capsule, slight creaking, and a little restriction of motion. At present the right knee is the only joint much involved, showing fullness, creaking, and a thickening of the capsule. The ankle and shoulder, however, are somewhat affected. There is general glandular enlargement, with enlargement of the spleen, increase in the reflexes, normal blood-count, and no temperature. *X*-ray picture shows no bone changes. The condition was thought to be probably infectious, or at least the result of an infection, and probably identical with the disease described by Still. The cases of arthritis deformans studied in the Johns Hopkins Hospital form a complete series according to the age of the patients. In the young cases the glands and spleen are often enlarged, and in these patients a diagnosis of Still's disease is made. With increase in age glandular enlargement becomes less marked, and we gradually approach the typical arthritis deformans of adults. The disease is, however, the same condition throughout, its manifestations being somewhat altered by the age of the patient. The prognosis of these cases varies. Some of the patients get entirely well, but in others the disease is recurrent, and in many become chronic. Two theories as to the nature of arthritis deformans have been advanced, one regarding it as a specific infection, and the other as a joint involvement following other varied infections (gonorrhea, influenza, etc.) Certainly in these patients the joint troubles are stirred up by subsequent infections. The question of the local treatment of the joint involved is a most important one, and the value of a good functioning kneejoint makes it doubly important in cases where that joint is involved. Arthrotomy and irrigation seem wise procedures, and if a villous arthritis is found the superabundant tissue can be removed surgically. The important point to remember in connection with this case Dr. McCrae thought to be the fact that the acute stage is so often either overlooked or confused with rheumatism.

Dr. Cole showed a case of tumor of the parotid gland. There was a distinct leutic history, and five years previously tuberculous glands had been removed from both sides of the neck. A pleurisy eight weeks before admission and a few crackling rales pointed to possible tuberculous condition in the chest. In the parotid region there was a fluctuating superficial swelling, which had first appeared without pain six weeks ago. A dram of pus was withdrawn, but no tubercle bacilli were found, and cultures were negative. The history of tuberculosis, however, and the clinical characters of the swelling pointed to its probable tuberculous character, though the guinea-pig injection had not positively decided the question.

Tuberculosis of the parotid is a very rare condition. Certain organs in the body seem to be immune to this infection, the salivary glands being very rarely infected, in spite of the fact that the lymph glands are so often involved.

Dr. Opie read a paper on the eosinophiles during experimental trichinous infection. The eosinophiles were known long before Ehrlich, but the granules were thought to be fat. They occur in all mammals, and are always less in number than the neutrophilic cells. The ordinary leucocytosis is well understood, but eosinophilic leucocytosis has never been well worked out. Dr. Opie infected guinea-pigs with trichinous meat, and found that the eosinophiles showed no change until the tenth or twelfth day, and then gradually increased till the twenty-first day. The polynuclears also increased for a time. When a great number of trichinae were used the weight of the animal fell. Just before death there is a rapid decrease in the eosinophiles. The question of the relation between the blood-cells and the course of the embryos in the body is an interesting one. In the mucosa of the intestines there is no definite increase in the eosinophiles, nor is there an accumulation anywhere else except in the lymph glands and in the lungs. In the bone-marrow of animals dead of this disease the fat is found much diminished and the marrow-cells increased. This is particularly true of the eosinophiles, and the increase affects chiefly the myelocytes. This corresponds to the "leucoblastic marrow" seen in human beings. When the trichinous infection is large destruction of the eosinophiles is seen, and the effects of this parasite, as seen in Dr. Opie's experiments, suggest the work of some soluble toxin.

Dr. Schmoll reported his investigations as to the chemical origin of the leucocyte in leukemia. The blood was studied with the patient on various diets, and it was found that food rich in albumen increases the number of leucocytes, the kind of albumen being apparently indifferent. The conclusion was drawn that the body is capable of extracting nuclein from the ingested food.

MEETING HELD MARCH 21, 1904.

Dr. T. B. Futcher reported two cases of gout in negroes. The first was a man of 31, who was admitted to the hospital complaining of dyspnea and rheumatism. He had had no infectious diseases except measles. There was a marked alcoholic history extending over many years. About six months previously he had had an attack of "rheumatism" in the left big-toe joint, from which he recovered. On admission the same joint was swollen, red, and sensitive. The heart was enlarged, and there were physical signs of mitral stenosis and insufficiency, and of aortic insufficiency. The acute gout subsided, but the patient was again admitted some weeks later with signs of broken compensation (cyanosis and edema). The symptoms cleared up, but about two months subsequently the patient was admitted for the third time, complaining of dyspnea and edema. He died in a semicomatose condition within 24 hours. Autopsy showed mitral insufficiency and stenosis, aortic insufficiency, and a sodium-biurate deposit in the synovial membrane of the big-toe joint. Dr. Futcher thought that there was probably no relation between the gout and the heart condition. The second patient—a man of 24—was admitted with anemia, puffiness of the eyelids, and marked headaches. The urine contained albumen and casts. There was swelling of the left big-toe joint, with pain and tenderness, but this disappeared in two weeks. Headaches became worse, coma appeared, and death followed. Autopsy showed a chronic interstitial nephritis of the small white variety. The interest of these cases lay in the rarity of the disease in negroes, no other cases having occurred at the Johns Hopkins Hospital. Dr. Schmoll spoke of the relation of uric acid to gout. Two theories have been advanced—one based on retention due to the failure of the kidneys to excrete (Garrod), and the other on an actual increase in formation of uric acid. Neither theory, however, is tenable. Gout may be due to precipitation of uric acid from the blood (for it exists there, though not detectable on account of its combination with thymic acid) or to an actual synthesis.

Dr. H. A. Kelly showed a new instrument recently devised by him for accurately recording the findings of palpation, substituting an objective method for the subjective touch sense. It is called a piezometer, and registers differences of hardness and softness, of rigidity and of pressure needed to cause pain. He also read a paper on myomectomy in its relation to pregnancy. Formerly in all cases of myoma pan-hysterectomy or supravaginal hystero-myomectomy was done, but with improvement in technic myomectomy has been more commonly practiced. Two hundred and thirty-one such operations have been done at the Johns Hopkins, with six deaths. The following are the reasons for the procedure: (1) It removes the disease without the uterus; (2) It avoids menstrual disturbance and an artificial menopause; (3) It allows conception; (4) It does not cause the mental distress which accompanies removal of the uterus. Of 140 subjects reviewed by Dr. Kelly from his own work, four have conceived. The patients presented various types and sizes of myoma. Two of them have borne full-term children, one miscarried, and one is now pregnant. Schauta, Wurder, and Olshausen have reported cases of conception following myomectomy, but there is no series which shows quite this proportion of successes. Dr. Nobley said that he was a myomectomist, but not an extreme one, believing in the operation under a number of limitations. The woman should be under 35, the tumors small in size and number, the patient's full consent gained for the more dangerous procedure, and a strong desire for children present. He knew of at least two children born of women on whom he had performed myomectomy.

Mr. Bean reported some observations made in the dissecting-rooms of the Johns Hopkins Anatomical Laboratory on the subclavian artery in man. Two hundred and nineteen subjects were studied and five general types of the artery observed. Four anomalies were found—(1) A lateral thoracic artery in five of 28 cases (this may have clinical importance in broken rib, tapping of the pleura, or resection of a rib); (2) Thyroidea in a artery supplying the lower half of the thyroid gland—of clinical importance in tracheotomy and surgery of the thyroid; (3) An anomalous right subclavian artery; (4) An anomalous origin for the arteries from the first and second parts of the subclavian.

Book Reviews.

The Treatment of Fractures. By Chas. L. Scudder, M.D. Philadelphia, New York, and London: W. B. Saunders & Co. 1904.

The present edition (the fourth) maintains the exceedingly practical tone which has characterized Dr. Scudder's book throughout and which has made it of use to students and to the profession generally. The illustrations are even more profuse than heretofore. The addition of a necessarily cursory chapter on dislocations has not, it seems to us, been altogether wise, for it forms somewhat of an anticlimax to an otherwise well-balanced book.

American Year-Book of Medicine and Surgery. Surgery. Philadelphia, New York and London: W. B. Saunders & Co. 1904.

Dr. Gould's book continues to be an excellent review and to hold its place in the front rank of year-books. The *résumés* of articles—never easily made if full attention is given to accuracy and terseness—are in this book always well done. The selection is good and the arrangement convenient. The work is *not* an example of "tabloid" literature—in which case it could only be condemned—but of the highest type of selective condensation, and it can be, without compunction, recommended to busy men as a safe, comprehensive, terse, and usable encyclopedia of the year's work in surgery.

A Text-Book of Legal Medicine and Toxicology. Edited by Frederick Peterson, M.D., Chief of Clinic, Nervous Department of the College of Physicians and Surgeons, New York, and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy, and Toxicology, Rush Medical College, in affiliation with the University of Chicago. Two imperial octavo volumes of about 750 pages each, fully illustrated. Per volume, cloth, $5 net; sheep or half morocco, $6 net. Philadelphia, New York, London: W. B. Saunders & Co. 1903.

In reviewing Part I of this work we stated that if Part II was as complete in all its details it would present the best and most comprehensive view on the subject of legal medicine of any text-book with which we are acquainted. As Volume II is now before us, we find we are justified in reaching this conclusion.

The work is divided for convenience of reference into two sections, Part I and Part II, the latter being devoted to toxicology and all other portions of legal medicine in which laboratory investigation is an essential feature.

The work will be found not only useful for the medical profession, but likewise for the lawyer, pharmacist, and chemist. We may quote as of especial interest the chapters on abortion, malpractice, and medico-legal relations of the x-rays. The responsibility of pharmacists in the compounding of prescriptions, in the selling of poison, in substituting drugs other than those prescribed furnishes a chapter of the greatest interest to everyone concerned with questions of medical jurisprudence.

There are a number of colored plates depicting the condition of the stomach after poisoning with various drugs. The entire work appears in a manner highly creditable to both the authors and publishers, and we predict that it will take its place as the foremost work on this highly-interesting subject.

J. H.

MARYLAND MEDICAL JOURNAL.

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BALTIMORE, JULY, 1904

A HOMEOPATHIST'S VIEW OF PROFESSIONAL AFFILIATION.

THE presidential address of Dr. Eldridge C. Price to the State Homeopathic Medical Society is a very interesting paper, and on some accounts better presented in the MARYLAND MEDICAL JOURNAL than it would be in a homeopathic organ. Doubtless a good many homeopathists are as well qualified as Dr. Price to speak on the subject of his paper, but there is at least one reason why many on our side of the ancient fence would prefer to hear from Dr. Price.

Besides manly and professional character of a very high type, Dr. Price has another qualification which makes him an especially fit spokesman. He is exceptionally well trained in the principles of his school and is intensely loyal to its traditions. He is, in short, about as partisan as is consistent with a liberal education and ripe experience. He does not prophesy smooth things. He holds that a man's beliefs have an important bearing on his professional character and fitness. He holds his own views in high respect, and can defend them ably.

Dr. Price's address considers that part of the code of ethics of the American Medical Association which defines the conditions of membership, and particularly the changed phraseology which removes obstacles to the admission of physicians trained in homeopathic schools. The formal removal of these barriers does not mark any very sudden or striking change of opinion on our side of the fence. Medical science has made a stride or two since 1847, and the moral responsibilities of the profession have correspondingly increased. The homeopathist should have shared in this advance, and if so, must recognize augmented obligations. The chief gift of the last half-century to us has been our emancipation from dogmatism. Whether the years have done just the same thing for the homeopathists is not for us to say. But if the homeopathists of today were not very much better physicians than the homeopathists of 1850 no one would have thought of removing the landmarks. We are not prepared to ascribe a very virtuous quality to the act of removing them. It is doubtful if we were actuated by a deep sense of justice; but it was not an indifferent act, and certainly not a party maneuver. It is not surprising, however, that the homeopathists are inclined to scrutinize the deed from a party standpoint. We are of the opinion that any considerable movement of the homeopathists toward affiliation with the "regulars" would not yield them any advantage as a party.

Dr. Price believes that the homeopathic law of therapeutics is an important part of the body of medical truth. If such it be, and if it can be engrafted and made to grow upon the body of accepted scientific truth, then the faith of the homeopathist will indeed be engulfed and his distinctive marks obliterated. It would be a great triumph, but very poor politics, to make a wholly successful end of Hahnemann's contention.

We have not removed the barriers in the belief that the distinctive homeopathic faith can or will or ought to be planted in our field. Let that be as it may. If it is a vital faith, it will survive; if not, it will die. Scientific medicine will profit by the issue whatever it is. In either case, whether the faith increase or decline, the "practical" significance of the sectarian name must fade. To the individual "homeopathist" the practical value of the designation can be as certainly destroyed by universal adoption as by unanimous rejection, and the only way to preserve it is to circumscribe its growth within party lines.

For the fully-persuaded adherent of homeopathy the question appears to be whether he shall risk the disintegration of his party for the sake of propagating his faith. The conditions upon which he may do so are not quite so simple as they appear. Besides being a legally-qualified practitioner, he must profess that his practice is not based upon an *exclusive* dogma, and he must announce himself to the public simply as a physician.

These conditions seem to Dr. Price reasonable enough, but he wants to know whether such concessions will, in fact, secure to the physician trained in homeopathy real liberty of thought and action in the company of "regulars." "Would we," he asks, "be permitted to discuss homeopathy at the meetings of those organizations?" "Would we not be expected to refrain from all mention of the practical application of homeopathy?" "Would we not be treated with polite forbearance as persons of peculiar mental organization or even as mental invalids?"

Our permissions and our expectations have so often been brought to naught by men in our own ranks that we dare not say what we shall expect or permit our homeopathic friends to do with liberated faculties. Dr. Price's questions cannot be answered except by the experiment. Sometimes we have followed false lights with callow devotion; again we have hounded to death heaven-sent truth-tellers; between times we have exercised polite forbearance. But part of the time we do right, and always we are rewarded according to our works.

We have not planned the next chapter of this story, and we do not know whether it will disclose the lady or the tiger.

LIFE-PRESERVERS.

In Baltimore a good share of our June gossip turned upon perils by water. We talk and even think about such things just after a sensational catastrophe. A few months ago a theater in Chicago was burned, the loss including a few hundred human lives. We were seized with thoughtfulness at that time, but it passed before we learned the outcome of the Chicago investigation, if indeed the investigation had an outcome.

The burning of an excursion steamer two weeks ago in New York, involving a thousand deaths, renewed our interest in the safety of life. The General Slocum had, it appears, very complete arrangements for disposing of her passengers. The fire hose was very weak, and the hose connections at the tank concealed a water-tight diaphragm which perfectly excluded dampness from the 16-cent hose. There was an unlighted storeroom containing very inflammable material near the galley. When the fire drove the passengers from the boat to the water it was found that the arrangements for drowning were nearly as good as those for burning. The life-preservers, but recently passed by the government inspectors, were very fragile. Some of them went to pieces in the hands of those who tried to put them on; others held until they dropped with their precious freight into the water, when they burst and distributed quantities of chopped cork to mark the spot where they ceased to be life-preservers.

In Baltimore we were very much impressed by the performance of these life-preservers, and began to inquire whether those carried on our own steamers were as serviceable. We learned that in our town the life-preservers are inspected every year.

The regulations concerning life-preservers were published in the daily press. They require a life-preserver to be made out of stout canvas and to include six pounds of solid cork in blocks, having a specified buoyancy. A gentleman who has fair opportunities to observe the equipment of passenger steamers said in the public press that he had within two years seen on a passenger steamer a lot of life-preservers black with mildew and so rotten that they could be punctured with a finger nail. These life-preservers contained no cork at all, but cornstalk. Moreover, he said that many life-preservers now in use contain no solid cork at all. This statement brought forth the additional information that life-preservers containing "granulated" cork are passed by the inspectors, and that those containing California tule grass are also passed. It was suggested that the material reported by the inexperienced observer as cornstalks was in reality California tule grass.

The reporter of the cornstalks admitted in a private interview that he knows not the tule grass of California, though he is as familiar as any other rustic with the cornstalks of Maryland. He is aware that many life-preservers in use at present appear to contain 12 bunches of very bad hay. But the cornstalks contained in the particular lot of life-preservers would not, he is convinced, furnish 24 pounds of buoyancy in the waters of Maryland.

The information furnished by the inspectors is not yet quite complete, for we should be assured that the tule grass of California when sewed up tight in good duck can be distinguished from the cornstalks of Maryland, which in the full light of day so strongly resemble the tule grass. It may, of course, be that the distinction is unimportant.

Of course, it did not happen that one of the large excursion steamers plying out of Baltimore had her after-deck furnished with rotten black bags of cornstalk. Everyone knows that a steamer carrying truck of that sort must have been in a small way of business, and it is just as clear that life-preservers which contained cornstalks and were black with mildew in July were not strong and white and did not contain tule grass at any time in the preceding six months.

Persons who may at any time have to swim for it would like to know whether a life-preserver containing solid cork is more easily brought ashore than one filled with "granulated" cork, and whether tule grass has any special claim upon humane consideration not possessed by cornstalk.

Correspondence.

THE NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

Editor of the Maryland Medical Journal:

Dear Sir—I am in receipt of a number of inquiries from all over the United States and from abroad concerning the outcome of the various meetings which have taken place in Baltimore, Philadelphia, New York, and Atlantic City in regard to the formation of a national tuberculosis association, and I ask you, in the interest of the cause, to kindly publish the following in the next issue of the JOURNAL:

An American national organization for the study and prevention of tuberculosis has been formed at last. The constitution and by-laws of this new society were adopted on Monday, June 6, at Atlantic City. The objects of the organization, as stated in its constitution, are as follows:

(a) The study of tuberculosis in all its forms and relations; (b) the dissemination of knowledge about the causes, treatment and prevention of tuberculosis; (c) the encouragement of the prevention and scientific treatment of tuberculosis.

The following are the officers of this association: Dr. Edward L. Trudeau of Saranac Lake, N. Y., is the first president; Dr. William Osler of Baltimore and Dr. Hermann M. Biggs of New York are its vice-presidents; Dr. George M. Sternberg of Washington, D. C., late surgeon-general, is its treasurer, and its secretary is Dr. Henry Barton Jacobs of Baltimore. The board of directors, in addition to the officers above named, consists of Dr. Norman Bridge of California, Dr. S. E. Solly of Colorado, Dr. John P. C. Foster of Connecticut, Dr. George M. Sternberg of Washington, D. C.; Dr. Arnold C. Klebs and Dr. Robert H. Babcock of Illinois, Dr. J. N. Hurty of Indiana, Dr. William H. Welch, Dr. William Osler. Dr. H. B. Jacobs and Dr. John S. Fulton of Maryland, Dr. Henry M. Bracken of Minnesota, Dr. William Porter of Missouri, Dr. Edward O. Otis and Dr. Vincent Y. Bowditch of Massachusetts, Dr. Frederick L. Hoffman of New Jersey, Dr. Hermann M. Biggs, Dr. S. A. Knopf, Dr. Edward L. Trudeau and Mr. Edward T. Devine of New York, Dr. Charles L. Minor of North Carolina, Dr. Charles O. Probst of Ohio, Dr. Lawrence F. Flick, Dr. Mazyk P. Ravenel, Dr. H. S. Anders and Dr. Leonard Pearson of Pennsylvania, Dr. M. M. Smith of Texas, Dr. George E. Bushnell of the United States Army Hospital, and Surgeon-General Walter Wyman of the United States Marine Hospital.

Its membership is to consist of three classes: (a) Members—Those who are elected by the board of directors and who pay annual membership dues of $5. (b) Life Members—Those who pay $200 and are already members of the association. (c) Honorary Members—Persons distinguished for original researches relating to tuberculosis, eminent as sanitarians or as philanthropists, who have given material aid in the study and prevention of tuberculosis.

The government of the association, the planning of work, the arrangement for meetings and congresses, and everything that appertains to legislation and direction, are to be in the hands of the board of directors, and committees are to have the power to execute only what is directed by the board.

The board of directors is empowered, however, to appoint an executive committee of seven members, to which is entrusted the executive work of the association. This committee, chosen at the meeting in Atlantic City, consists of Dr. Edward L. Trudeau, Dr. Henry Barton Jacobs, Dr. Edward O. Otis, Dr. Mazyk P. Ravenel, Dr. Arnold C. Klebs, Dr. John N. Hurty and Mr. Edward T. Devine.

The board of directors is empowered to appoint representatives in the International Committee on Tuberculosis. It was decided at the meeting of organization that this representation was to be headed by Dr. William Osler, and his associates will be selected later. The board is authorized, also, to appoint such committees as may be necessary for scientific and educational work, and for the holding of meetings and congresses.

Drs. Osler, Trudeau, Biggs, Devine, Barrier, Huber, Knopf, and others addressed the meeting on the scope of the work which was before the association. The addresses of the various speakers were received with enthusiastic applause, but the ovation given when Dr. Trudeau appeared on the platform surpassed anything the writer has ever been privileged to witness before. It was spontaneous, genuine, and lasted for minutes. It was a grand tribute from the vast assembly not only to the pioneer of the sanatorium treatment in America, but to the grand qualities of Dr. Trudeau as a physician, scientist and humanitarian. Dr. J. M. Barrier of Delhi, La., in speaking of the fearful mortality from tuberculosis among the negroes, urged the new society to take up also the work of prevention of tuberculosis among the colored population of the United States.

Concerning the character of the new organization I may be permitted to quote in conclusion the opinion of a layman, the editor of *Charities*, the organ of the New York Charity Organization Society:

"There are two conspicuous and equally gratifying features of this national movement. It is thoroughly representative of the leaders of the medical profession, and at the same time there are ample evidences of their determination to make the association of direct practical value in legislation, in the education of the public, and in bringing about a co-ordination of philanthropic, medical and educational agencies for the conquest of the great scourge.

"While the scope of the association has not been officially outlined, it is evident from the stirring addresses made on the evening of the first meeting that it will work directly for the better education of the public as to the means by which tuberculosis is communicated, for the erection of hospitals and sanatoria, for the adoption by local boards of health of such measures as have been so effective in reducing the death-rate from the disease in New York city, for the formation of local committees and associations in various communities, and for the intelligent co-operation of State and municipal authorities, private voluntary agencies, and the medical profession.

"The question as to whether a special journal shall be established was left over for later consideration, but either through a special periodical or through the use of the medical or the lay press the association will aim to bring about a practical and beneficial interchange of experiences, and a more intimate knowledge on the part of those who are at work in any community of the measures which have been found effective elsewhere. The executive committee was empowered to select an executive secretary, who will probably be a layman, and as soon as the condition of the association's treasury warrants it a determined and aggressive campaign will be opened.

"It will be a source of pride and gratification not only to physicians, but to all who have taken a sympathetic interest in the warfare against consumption, that there now is a national body to which local associations and committees, hospitals and sanatoria, legislatures and local municipal administrations may turn with confidence for the last word on any disputed subjects, and for encouragement and sympathy for all good work on lines which experience has approved as promising of good results."

The majority of the vast audience present at the Atlantic City meeting were enrolled as members of the new organization.

S. A. Knopf, M.D.

Medical Items.

The death of Dr. Nathan Smith Davis at Chicago on June 16 removes one of the most interesting figures in American medicine and terminates a remarkable career. Dr. Davis was born in Greene, N. Y., in 1817, and graduated in medicine at the College of Physicians and Surgeons of the Western District of New York at Fairfield in 1837. He practiced for a short time in Binghamton, but moved to New York city in the year of the terrible cholera visitation, 1838. His devoted activity during this epidemic first brought him into prominence. In 1849 he became professor of physiology and pathology in Rush Medical College, Chicago. Here he began to agitate for reform in medical education, and the opposition which he encountered led to his withdrawal from the faculty of Rush Medical College and to the foundation of the Chicago Medical College. The organization of the American Medical Association was an important outgrowth of Dr. Davis' agitation for reform in medical education, and he was very rarely absent from its annual meetings. He was its president in 1864 and 1865. He was a voluminous contributor to periodical medical literature. It is said that the most widely used of Dr. Davis' works is a book on agricultural chemistry written in 1849.

MARYLAND
MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 8 BALTIMORE, AUGUST, 1904 Whole No. 1035

THE LIFE TRAGEDY OF JOHN ADDINGTON SYMONDS.

By George M. Gould, M.D.,

Philadelphia.

THE reader of Brown's "Life of Symonds" must be strangely insensitive who is not sympathetically grieved by the peculiar and profound pathos of the man's life and suffering. One of the sharp appeals to the attention, coming almost as a shuddering jar, which so often halts one in reading Symonds' own words is shown in this challenge of his of "the injustice of the world:"

> I felt at Venice, and I feel sure, very deeply, the injustice of the world, that a man like myself, who has no merits to distinguish him from the rest, should be, through luck of birth and money merely, enabled to play upon the lyre of life so largely to his satisfaction—sea, city, islands, pictures, palaces, there; here, mountains, fine air, forests, homely houses, flowers—and in both situations intellectual enjoyment, responsive human beings, energies of heart and hand.

There are few men so highly endowed with both the internal and external gifts of good fortune who would have quarreled thus with Fate for its "injustice." There are fewer still who would have believed so naively in the momentary happiness which he caught out of the monotonous drag of wretchedness which made up his days and nights, his years and his life. The man who could think and feel as this one did may teach the reader the best lessons which come only from the intimate living with another through biographic study. One who loves the swift, clean sword of intellect, polished by knowledge and culture and handled by art and power, cannot pass by this duel between fate and personality. One who himself feels the tragedy that such swordsmanship may bring must have waited for this sad, bright hero. The physician who can see the pathogenic source of the sufferer's hurt should find a doubled pathos in the sad tale.

As in Beethoven's great symphony, the knocking of fate is at the very beginning. Not even in childhood was the boy allowed the usual boyhood plays and joys. From his earliest years and during youth he was tormented with frightful dreams, night terrors or nightmare, visions, etc., and from 8 to 28 he was struck as with a semiparalysis, and had daytime states of trance, self-absorption, times when space, time, sensation itself, seemed obliterated. He took no interest in athletic sports, and was wanting in muscular vigor. He preferred rambling alone and wandering over the downs or through the woods. He was afflicted with diarrhea, which at about 12 became severe and chronic. Somnambulism began at about this time to complicate the tormenting dreams. From 14 to 18 he had a number of depressing ailments—colds lasting all winter, lack of energy, etc. His father, who was a successful physician, tried all sorts of drugs; but, as the autobiographer says, "these things did not touch the root of evil." All through Symonds' life he sets down the fact of the "root of evil," but, as usual, with the astonishingly repetited failure to recognize the cause and effect. So now he writes of "close study," the poring stupidly and mechanically over books, immediately preceding the sickness and the drugs. He is "tired and lamentably dismal about his study," forgets everything he reads, etc., and headache is "bitterly resented." He is "very ill, his memory weak, his head heavy, his limbs dragging, his whole being low," etc., until his father telegraphs him to give up all study, and then begins the walking, "much of it and every day."

But stopping reading was, of course, an impossibility with such a mind, although "to read as much as he intended he could and might not," and there continued the "bad, depressed headache, painful reveries, weary dreams, weakness, melancholy, nervousness at night, and inability to do literary work in the morning. He then "took to riding again, with much benefit to his health," for "rides take away the headaches and depression. I got sleepy and read less than I might." He was now 21.

His return to Oxford was followed by a return of all the old symptoms—the persisting repetition of bad nights, sick headaches, insomnia, weakness, nervousness, pain in the trapezoid muscles, depression, weakness of memory, etc. Study confuses him, and strychnin is resorted to. He is unable to read, and the steady complaints are reiterated of headache, cloud-over brain, return of the "old cramped-head feeling," mounting at last to "doubts, questionings, mad suicidal fancies," etc. When coming up for examinations he has to use "sleeping draughts" and "pick-me-ups."

Travel is, of course, commanded—(I am aware of the scurrilous clubman's nonsense as to the reason given for his leaving Oxford; no word of correction is needed), and one should note the formidable list of books he took with him and devoured on trains, in hotels, etc., followed immediately by headache, sleeplessness, soreness of the scalp, neuralgic pains in the head, his eyes feeling "as if boiled, and regular centers of agony to move which is to set two instruments in motion." These and many such ever-varying symptoms are entered many times a day in the case histories of their patients by the modern oculist. Here are others, set down by Symonds, writing of three years:

Strained feeling in the head.

Chills and rheumatism.

Pain, weakness, and aching eyes.

Brain so troubled; headache.

My eyes got worse at Oxford.

Cannot read or look out of the window when on train, nor can I read or write during the evenings at hotels.

Terrible physical and mental weakness. An oppression under which I hope you may never grow has weighted me to earth, and neuralgia has gnawed me until I am very feeble.

Being unable to use my eyes for study, I read very little. But I was able to walk as much as I liked.

Illness and *ennui*.

Deeply wounded in heart, brain, and nerves.

The physical illness, that obscure failure of nerve-force, which probably caused a subacute and chronic congestion of small blood-vessels in the brain, the eyes, the stomach perhaps, and other organs.

Enforced leisure—periods of unemployed solitude more frequent and trying, owing to the weakness of my eyes and head.

Hard to bear both blindness and weakness of brain in solitude, for thought and reading are rendered equally injurious to the chance of future strength.

Head and eyes fail.

Theater and lecture-rooms are bad for head and eyes.

Sleepless nights.

Weakness of head and eyes.

Eyes for more than two years useless.

Sinews, strong nerves, strong eyes, are needful for action. I have none of these.

My brain refused to work; then my eyes were blinded.

Wasted idleness of existence—that is what I suffer from.

Not able to read much, owing to weakness of eyes and other ailments.

To lessen the ennui of the long periods in which he could not read and write, as also unconsciously to get physiologic relief from the reflex ocular irritation aroused by reading, he now spent much of his days in rowing, riding, in social calls, entertainments, etc. He had now reached the age of 25, and the outcome of all the sufferings he had endured, the direct result, as it seems, was the development of "mischief at the apex of the left lung," diagnosed by his father. The significant fact needing emphasis is that "the appearance of this lung trouble began almost immediately, though very slightly at first, to relieve the brain trouble from which he had suffered so acutely." At once blisters, morphin, etc., produce a "head-weariness and eye-weakness" of which there had long been constant and bitter complaints. Now also begin "the long series of journeys in search of health," the cause of the ill-health always taken with the traveler as his most precious possession. Of course, there was the ever old, ever new "depression, thwarting of aspirations through ill-health," colds, and again bad colds, and still others, with records of "feebler, chronic trouble in the head," "permanent malaise and nervous sensibility, which made me incapable of steady work," etc. "If I produce, my thoughts tear me like vultures; I have to leave the lines unfinished."

This connection between writing and suffering, always recognized, becomes more vivid, but no suggestion of its true causal nature ever occurred either to Symonds or his physicians, except, of course, the old fallacy that it was due to intellectual labor *per se*. Other jottings showing it are as follows:

> The daily *ennui* of my tired brain and eyes. Nervous irritation amounted at times to insanity. A sprained ankle made matters worse [because it confined him to his room.]
>
> Not able to use my eyes for continuous study.
>
> Why I have not written is simply * * * a letter costs me a good deal.
>
> Translation was intolerably irksome. It retarded the recovery of my eyesight.
>
> It was only by tours abroad that I kept myself from physical collapse. [Travel was the only way to keep him from study.]
>
> How my blood burned while I sat scribbling until the manuscript was finished!
>
> The irritability of my brain rendered me peculiarly intolerant of sustained labor. [A natural, ancient, and ever-living example of *post hoc* logic.]
>
> I worked recklessly.
>
> In the winter my health, as usual, began to fail. ["As usual" also with all eye-workers.]

What an unintentional illumination the actual facts receive from such entries as these:

> I attribute my gradual recovery in no small measure to the fact that I resolutely refused to give up study.
>
> To write vigorously only ends in irritation of the nerves by night and day.
>
> Whatever you do, don't go and lose your health.
>
> Sudden and inexplainable collapses.
>
> He read 16 books [in Italian] within a fortnight.
>
> When the eyes and brain are both disturbed there is no happiness.
>
> I have worked out the thread of *ennui* which made me take this paper to write.
>
> All bad weather [keeping him indoors, etc.] are depressing to his health and spirits.
>
> Wandering again, partly for my eyes' sake.
>
> He now dictated much of his work to his wife.
>
> Brain tired with correspondence.
>
> The wet summer had a decidedly bad effect on his health and spirits.

I was falling ill with too much writing.

If I could have taken walks, I should have kept my health.

He worked 10 hours a day at proofreading, and was on the brink of actual collapse all winter.

He had continuous fever. There was only an hour or two in the morning when he could "use his head."

The day's headache has begun, and I must stop.

Tired and worn with writing.

The life of Michael Angelo caused "fainting and falling fits." "I have been very ill."

Another hundred quotations might be added to illustrate the thought now familiar to all ophthalmologists. These may serve as samples:

I felt that my incessant brainwork and amusements at Davos are in a true sense occasioned by the total lack there of free sensuous beauty and delight inflowing from the outer world. Most of us who are not born mountaineers have been bred to the enjoyment of such things as the pyrus and the cherry symbolise. Without, perhaps, being aware of it, they are driven too much in upon themselves by the monotony of snow through seven months of winter and the austerity of that brief summer of the mountains. The tension becomes at last too great. They react against it by debauches of brainwork, stimulation, company. (49.)

Then came the goddess Drudgery I had invoked, and spoke to me, and I replied as follows: "It is my particular source of misery that I cannot labor; I am forced to be inactive by my health. If I could study for six or seven hours a day, the intervals might be devoted to a well-earned relaxation. But now the whole day has to be devoted to encouraging a cheerfulness and peace that rarely comes. Relaxation is labor, and the untamable soul frets under its restrictions." A little nervous strength might make all the difference—a loosing of the bands about my forehead, a soothing of the aching eyes. (28.)

Ever since you left us in the summer I have been suffering from a chronic inflammation of the eyes. This made my literary work painful. And I was under obligation to do a heavy bit before the end of the year. I translated Cellini's "Memoirs" into English. Under this pressure I broke down, and I have been seriously ill for more than two months with a very exhausting fever. It is of the nature of ague, I think, and has implicated the lungs. The result is that now I spend wretched days of helpless prostration without brain, suffering in every joint, alternately icy cold and burning hot, sleepless at night or pursued by tedious dreams, incapable of moving beyond my house and its wooden shed outside, the mere shadow and vision of a man.

Whether ill or not there was no respite of literary work:

I have managed in this illness to write a long poem in ottava rima on an Italian story, another in terza rima of a ghastly kind, an elaborate essay on Heywood's plays, a notice of Brome's dramatic works, and a portion of an essay on the Italian republics of the Renaissance. But it is killing work. I say to myself, like Macbeth, "At least we'll die with harness on our back." (33.)

And the curious and long well-recognized sudden alternations of seeming health and profound suffering in migraine are often met, as, *e. g.:*

> What I suffer I only know. And when this emotion becomes blunt I shall know, not that I am freed, but that I am dying, for these intense pains are a condition of vitality in me. It is all this which makes me alternate between feverish and voracious work and exhausted idleness. I have intervals of clairvoyance and intervals of stagnant blindness. (33.)
>
> Violent revolutions of subjective tone from extreme quiescence to febrile excitement, and back again.

As from the beginning, up to his death there break forth the constant and painful iteration of the affliction of colds and draughts—chest colds, heavy colds, severe colds "which left me exhausted," bad colds, bronchitis, long and tedious illness; "I catch cold then," severe colds, bronchitis, influenza, etc. The intimate and causal connection of eyestrain and colds, influenza, and diseases of the respiratory tract is growing clearer to the profession nowadays. Patients long ago found it out:

> The way in which my nerves as well as lungs have been attacked looks like influenza. [And he thinks it a result of his writing.]

Just before his death (at 51) his cold was worse, his "throat very bad—almost a form of diphtheria."

So far as concerns the biographic clinic upon Symonds' life the greatest medical interest may lie in the development of his pulmonary tuberculosis. The diagnosis of any lung disease was made when he was 25, following close upon the years of intense suffering, denutrition, and weakness, all, as seems clear, the reflexes of eyestrain. Careful observations of the histories and morbid conditions of many such patients have convinced me that the severe migraine of eyestrain is a potent and frequent source of tuberculotic infection. It is of less concern whether one accepts as the method of pathogenesis—

1. The chronic denutrition and physical weakness which supplies a prepared soil for the infection;
2. The psychic depression, hopelessness, or melancholy, which reduces the energizing power of a healthy and active will; or,
3. The direct action of the morbid ocular reflex upon the pulmonary tissues.

In the case of Symonds all three causes were in synchronous and constant action. He himself recognized somewhat vaguely, but still definitely, the influence of a direct reflex when he says, 15 years after mischief at the apex of the left lung has been diagnosed: "The subsequent lung disease from which I am now suffering is no doubt the result of the strain of those years." More clearly it came out in the statements:

> Curiously enough, the lung troubles, which now threatened my very

> existence, seemed to relieve the misery of my brain. Gradually that organ regained tone, although I suffered frequently from attacks which proved that the disorder had not been lived down. Sustained mental labor was out of the question. I worked by fits and snatches. (31.)
>
> I always find that to organize a big book drills the holes in my lung. The other part of the business bores the body out, but does not destroy tissue.
>
> The friction of setting down to work has stirred my lungs up, and I am again far from well.

Pulmonary disease began at 25. Blisters were applied to the chest at 28; his "chest was so weak" at 31; his first hemorrhage was at 37, when he was "face to face with death and weakness;" Quain and Jenner give a poor report of his health at 40; Clark and Williams detect beginning disease of the right lung at 42; Davos makes a nervous man of him, pulls him together, and "cures the old lung trouble" at 48; there are always bronchitis and colds; he has "three months of illness, continued fever, and general disturbance of the whole system, including brain, lungs, and stomach." The symptoms immediately preceding his death at 53 remind one of those of Lewes and George Eliot. As a case of tuberculosis the general practitioner must find the clinical history highly anomalous, and the existence of other pathogenic factors than the simple tuberculotic process is clear. The chief was undoubtedly eyestrain and its migrainous reflexes. These were clearly active every day of his life.

The character of the man and of his fundamental disease is further illustrated by the interest he took, the time and money given to the social, urban, and economic welfare of his fellow-citizens at Davos, by the marvelous energy—physical and mental—shown in his walks, sports, mountain-climbing, tobogganing, etc., almost up to the day of his death. The account of a day's sport a year or more before his death given by his biographer (p. 459) and of his dancing the pizzica "as vigorously as any of the vigorous natives" less than a month before his death are facts that put a caution in the thought of the wary diagnostician. His biographer writes of him at the age of 44:

> Symonds' great physical energy was certainly one of the most remarkable and surprising things about him. No one who shared one of those expeditions with him would ever have suspected the invalid in that lithe, elastic figure, which breasted the hills with such apparent ease and left many a sounder man behind him. It was his intense spiritual vitality, his nervous energy, his keen enjoyment of lovely sights which supplied the motive power. These walking expeditions, of which he took several in the autumn of the year 1884, would have proved no slight tax on the resources of most men. A few days before the ascent of this Schwartzhorn, which is 10,300 feet high, he had enjoyed what he calls "three splendid days" on the hills.

It seems clear that the disease from which he suffered was a preceding, causing, and always complicating condition which, had it been recognized, as it should have been, even from his thirty-fifth year onward, would have given him sound lungs and a long life of usefulness and power.

A parenthetic word may not be amiss as to an always recurrent phase of the clinical history of eyestrain sufferers—that is, the influence of the added strain of presbyopia. This, when unrelieved, brings the lifework to a crisis of impotence and breakdown, and end, even of the life itself, as in the cases of Nietszche, George Eliot, Lewes, and others. With the entrance upon the presbyopic period new elements and added intensities of old ones are added. For instance, see the paragraph on page 10. At the beginning of this period (age 39) he writes:

> I have got up today for the first time since last Friday. I have had a strange attack, quite *unlike anything I experienced before.* From 2 P. M. on Friday to 4 P. M. on Tuesday I suffered from intermittent pain of a really horrible kind. I thought I must die or become insensible. And yet my mind was lucid.* It was a long huricane of torture, with short respites got by triple doses of chloral, lasting an hour and a-half. I live in dread, for the whole theater of my former misery throbs with a dull menace. It is not over, and I am so weak that I can hardly form these words. I never felt pain on so august, so colossal a scale. There was something grand in it. Most pain has an element of the nasty. This was like hell. It is worth the misery to have registered the sensation.
>
> I have suffered for more than a year from unrest, mortal fatigue, and from strange morbid irritabilities. The will to maintain feeble health at its maximum is broken down. (45.)

The most active of his literary years, age 46, was followed by great vital depression.

Tormented by his own suffering and the unfathomable mystery of it, he despaired almost of his own sanity, as so many other migrainous patients have done, and at the crisis of presbyopic wretchedness he writes:

> How can a writer escape from being neurotic? He has such tremendous changes of mental climate and revulsions of emotion. He is always vehemently growing or being violently amputated, and he is not a vine to suffer these alternatives in the due course of natural seasons. If genius is connected with insanity, this must be due in many cases not merely to a congenital diathesis, but also *to the abnormal vibrations set up in the nervous system of an author by the conditions of his labor.* A pendulum has rhythmic action so long as the motive force lasts, but here the creative rhythm is suddenly suspended just when the nervous energy is overstimulated to its utmost. I feel the fact acutely at the present moment, and am tingling, jumping.

And at 53 he died, a hero of erudition and literature, a martyr of medical indifference and ignorance. The principles had been scientifically stated for 30 years which, if put into practice, would have given him complete relief. Although many thousands have found that relief during the last 25 years, many other thousands are today needlessly suffering exactly as did Symonds.

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*Compare the noteworthy likeness as to this lucidity in the case of Nietszche—a long recognized fact in migraine.

At the age of 25 Symonds wrote in his diary:

> And for what work am I fitted? Jowett said, some time ago, for law or literature. I say, after some months' trial, not for law. And for literature, with these eyes and brain? What can I do? What learn? How teach? How acquire materials? How think? How write calmly, equably, judicially, vigorously, eloquently for years, until a mighty work stands up to say: "This man has lived. Take notice, men; this man had nerves unstrung, blear eyes, a faltering gait, a stammering tongue, and yet he added day by day labor to labor and achieved his end!" Shall it, can it be?

At 33 he describes himself as—

> Working very hard in my study at Clifton Hill House and filling four or five thick books of manuscripts with fervid declamations. But the strain was severe. I fear the whole horizon is changed for me as usual. Almost from the date I saw you in London I have been ill. I had to give up my visit to Eton, and on arriving here to take to bed. Bronchitis began the mischief, and the last three days have been one protracted torment. I sometimes wonder whether there are many men thwarted as much as I am by a series of protean small ailments; then I wonder with a sort of vanity how many of the kind do as much as I do.

At 51 his working day is thus described:

> I begin work at 9.30, and go on till 12.30; after lunch, at 2.30, I go to bed and sleep two hours; have tea in bed and talk to my wife; dine at 6.30; begin work again at 8 P. M., and go on with it till 1 or 2 A. M.; then to bed and sleep again.

The result was one natural to the depressing effect of severe migraine, but doubled in Symonds' case by the piteous crippling of his splendid scholarship and noble aims in life. Few men are born with wealth, intellect, the esthetic temperament, and a burning love of truth, who desire only to work unselfishly for the best interests of civilization and their fellow-men. When one such appears it is a genuine tragedy both for the man himself and for the world if ill-health prevents the rare conspiracy of the benevolent fates. And the pity of it is all the greater if the tragedy was wholly unnecessary and obviable. For the patient it is, as Symonds himself wrote, "the final sense of impotence to be effectual, most poignant, most crushing, most persuasive, and yet unutterable." The heart-rending outbreaks of sorrow and disappointment at his destiny (see pages 214, 230, 238, etc., of the biography) are almost too poignant to reproduce. More than once he thought of suicide, and once, at 28—note the age—he seriously contemplated it. He had thought deeply, perhaps too deeply, of his life-problem, but his nonmedical mind could reach no nearer the simple, little-great truth than "it is the center of the soul that ails." Intellect, one must keep repeating, is the product of vision—physical, or rather physiologic vision.

Even before this, a youth of 25, he approached the problem in this way:

> What happens to me is that one tide of physical depression after another sweeps over me, and not one leaves me as I was before. Each weakens me. I feel my strength of mind, and power of action and fancy, and sense of beauty, and capacity of loving and delight in life gradually sucked out of me. At the present moment I do not know what to do. Life is long for unnerved limbs and brains which started with fresh powers, now withered and regretful only of the past, without a hope for the future. I do not write this because I am not happy in my home. Far from that. But happiness, domestic felicity and friends, good as they are, cannot make up for a *vie manquée*. If a man has in his youth dreamed of being able to do something, or has rashly promised himself * * * if setting forth thus, he has failed upon the threshold, * * * then he resembles those for whom the poet wrote "*Virtutem videant intabescantque relicta.*" But I am not in despair. No one should give over hope. I am only disappointed at the failure of anticipation, and sorrowfully convinced that the weakness of which I have been conscious is inherent and invincible.

There is no doubt whatever as to the correctness of his diagnosis. There failed only one little logical nexus and conclusion:

> I sometimes imagine that if I had force enough to work over and over again at expression I might produce some satisfactory results. But I dare not apply such "improbus labor." My brain will not stand it. I lose my sleep. I am perplexed with obscure pressure on the top and front of the head. And this *Umarbeitung* cannot well be deferred until I have regained force. It is most effectual when the iron is yet hot and the enthusiasm of the first conception remains plastic. Thus I am thrust by my physical debility into the petty style. Yet even as it is, in this imperfect work, I derive the greatest pleasure from the contemplation of the great thoughts and splendid images presented to me, which I do not try to put into my own language, and for the moment feel assimilated to them. (*27.*)

And despite this glimpse of vague therapeutics:

> What I managed to do was done under great difficulties and in a desultory, fragmentary manner. Moving from one place to another, without access to libraries, and always in depressed health, I could not undertake any important work or engage in any regular scheme of study. Intellectually, I lived

from hand to mouth. The weakness of my eyes rendered systematic reading impossible, and I depended, in a great measure, upon my wife's unfailing kindness. She read aloud to me for hours together.

No one who has not suffered in the same way can adequately feel how great is the sapping, corroding power of my debility—eyes for more than two years useless; brain for more than two years nearly paralyzed—never acutely tortured, but failing under the least strain and vibrating to the least excitement. To feel as little as possible, to think and work as slightly as I could, to avoid strong enjoyments when they rarely offered themselves, has been my aim. I have done nothing in this period by a steady effort. Everything has come by fits and starts of energy, febrile at the moment, and prostrating me for days when they are over. Sometimes for weeks together I have not seen a ray of sunlight. At Florence, at Rome, in London, at Clifton I have risen with horror of these nights, have walked through the day beneath the burden of dull-aching nerves, and have gone to bed in hopelessness, dry with despair, and longing for death. Suddenly, in the midst of this despair, a ray of my old capacity for happiness has burst upon me. For a few hours my heart has beat, my senses have received impressions, my brain has coined from them vigorous ideas. But vengeance follows after this rejoicing. Crack go nerves and brain, and thought and sense and fancy die. The leaden atmosphere of despair closes around me, and I see no hope. Many are the men, no doubt, who have suffered as I have suffered. Last summer I spent six days in London, in Half-Moon street. I had just been subjected to treatment which gave me great pain and made me very weak. If it succeeded, it was to do wonders. In the midst of my weakness I hoped. I sat upon one chair, with my legs upon another. I could not read. I could not bear the light upon my eyes. I was too desolate and broken to see friends. I scarcely slept, and heard all night London roar, with the canopy of flame in the hot sky above those reeking thoroughfares. At 3 or 4 day broke. In the evening I sat idle, and it was dark. All the while I hoped. This cure shall do wonders. God, give me strength. * * * Cast me not utterly away as a weed. Have I not longed and yearned and striven in my soul to see Thee, and to have power over what is beautiful? Why do I say "Lord, Lord," and do not? Here is my essential weakness. I wish and cannot will. I feel intensely, I perceive quickly, sympathize with all I see or hear or read. To emulate things nobler than myself is my desire. But I cannot get beyond—create, originate, win heaven by prayers and faith, have trust in God, and concentrate myself upon an end of action. Skepticism is my spirit. In my sorest needs I have had no actual faith, and have said to destruction, "Thou art my sister." To the skirts of human love I have clung, and I cling blindly. But all else is chaos—a mountain chasm filled with tumbling mists; and whether there be Alps, with flowers and streams below and snows above, with stars or sunlight in the sky, I do not see. The mists sway hither and thither, showing me now a crag and now a pine—nothing else. Others see, and rest, and do. But I am broken, bootless, out of tune.

TYPHOID ORCHITIS.

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Orchitis and epididymitis as complications or sequels to typhoid fever are rarely encountered. Keen, Eshner, and Kinnicutt have by their researches put us in touch with the literature, and they have also carefully described cases occurring in their practice.

The present conception of typhoid fever as being a specific general infection, in which the bacillus typhosus can be obtained from the circulating blood, enables us to more readily understand the occurrence of complications and sequels such as parotitis, endocarditis, meningitis, pneumonia, pleuritis, orchitis, etc.

Inflammation of the testicle caused by the bacillus typhosus may appear first in either the epididymis or the parenchyma of the gland proper. It occurs oftenest during convalescence, but it has developed as early as the tenth day of fever and as late as the sixth week of convalescence. The morbid process may be limited to the epididymis, or, as is more commonly the case, the gland alone may be involved. In about 50 per cent. of the reported cases the testicle proper and its epididymis were affected. With the exception of one case, the disease was unilateral, and either the right or left side may be attacked. Effusion into the tunica vaginalis has been noticed in 12 per cent. The effusion may appear on the corresponding or opposite side to the inflammation. Suppuration occurred in 25 per cent. The literature affords but one instance in which suppuration of the epididymis was noticed. Necrosis and sloughing occurred in a few cases. The entire organ has been destroyed. Permanent induration of the epididymis is common. Atrophy of the testicle has followed in a few instances. Termination is generally by resolution. The affection has been met with in a child of four years, in which case there was a fatal issue, and in an adult of 47 years. It appears at an age when typhoid fever most commonly occurs. In an ordinary acute case terminating by resolution the attack lasts about eight days. If, however, suppuration is encountered, the course is more protracted, and may endure four or more weeks. Death has resulted twice.

Infection takes place through the blood-stream, although it is just possible that infection from the bladder through the vas deferens might occur in certain cases, for we know that the bacillus typhosus may be found in the urine of typhoid-fever patients. In the event of such manner of infection it would be reasonable to assume that the epididymis would suffer first. As the primary location of the inflammation is oftenest in the testicle proper, we must conclude that most, if not all, cases are the result of infection through the circulation.

A previous venereal history is rarely elicited, although in the case here reported the patient had had gonorrhea several times, and the affected testicle had been enlarged for a number of years.

In a total of 65 reported cases the bacillus typhosus has been obtained from the inflamed gland in six, and in but one of these was the agglutination reaction used in the determination of the organism found in the pus.

Eshner reported 44 cases. Kinnicutt's report brought the total up to 53, including Eshner's cases, two of his own, and seven others. To be added to these are: Lounois and Loeper, one case; J. T. Johnson, two cases; Curshmann, six cases; Liebermeister, three cases; Lockwood, one case, making a total of 66.

I am indebted to Dr. William F. Lockwood for permission to use the notes from the following case occurring in his service at the Baltimore City Hospital:

Clinical History.—J. C. R., aged 42 years; laborer; history of gonorrhea several times and alcoholism; left testicle has been enlarged for a number of years. The early symptoms of typhoid fever developed on or about August 6, 1903. He was admitted to the hospital August 15, having a temperature of 104° F. On August 22 the thermometer recorded 98.4° F. Patient slept during the greater part of the day. August 23 patient complained of pain in the left testicle. The epididymis was swollen and hard. The inguinal glands on the corresponding side were enlarged and hard. There was an effusion into the tunica vaginalis of the opposite side. Patient's temperature rose to 105.2° F. at 8 P. M.; pulse 104; respirations 28. August 28—The pain in the left testicle has been absent for four days. Patient again complains of pain, and the testicle is greatly swollen, red, and very tender. Temperature 102.4° F.; pulse 90; respirations 16 at 8 P. M. August 29—Testicle has been supported by a bandage; it is still much swollen. Rectal examination failed to disclose anything of note. His tongue is thickly coated, appetite is poor, and he is constipated. Temperature 100° F.; pulse 80; respirations 20. August 31—The quantity of urine in 24 hours is 16 fluid ounces; specific gravity 1015; reaction acid; albumen and glucose absent; diazo reaction negative. There are a few pus-cells and many desquamated epithelial cells present. Widal negative; malarial organism not found in blood. September 1—Leucocytosis 14,800. The testicle is still swollen, but is not so painful. September 3—Unguent. ichthyol, 10 per cent., was applied to the testicle. The effusion still exists on the right side. Temperature 98.8° F.; pulse 60; respirations 20. September 8—Widal positive; testicle still swollen. September 15—Patient feels very comfortable, and was permitted to sit up in bed. Temperature 98.6° F.; pulse 84; respirations 20. September 21—Patient complained of pain in his left testicle. The swelling is returning, and the effusion continues on the opposite side. September 25—Fluctuation was obtained about the lower portion of the inflamed testicle. The scrotum was shaved, cleansed, and the testicle aspirated. A good quantity of pale milk-colored pus and blood came away. A sterile gauze dressing was applied. The testicle continued to discharge the pale milk-colored pus until October 15, when it had become much reduced in size. The discharge had nearly ceased, and there was a small area of exuberant granulation tissue marking the point of aspiration. Patient was seen occasionally during November and December. The testicle had become smaller than it had been in years and the discharge of pus had entirely ceased. Patient was completely restored to health.

Bacteriological Report.—A culture was taken from the pus, which upon examination showed a bacillus resembling the bacillus typhosus. A 24-hour bouillon culture of the organism was used in making a serum reaction with the blood of a known case of typhoid fever. In a dilution of 1 to 40 there was suspension of motility and clumping within two hours. Smears from the pus showed no tubercle bacilli and no gonococci.

A serum test was made with the bouillon culture and the blood of another known case of typhoid fever, in which the clumping was almost immediate. A similar test was made, using the patient's own blood, with a similar positive result. A test was made with blood from a young man giving no history of typhoid fever. In this test the bacilli remained motile at least 12 hours. A 24-hour bouillon culture was treated with some antityphoid hog serum prepared by Dr. W. R. Stokes, the dilution being in one instance 1 to 40, in which case the agglutination was immediate. In another test, in which the dilution was 1 to 2, bacteriolysis resulted after the lapse of several hours. Inoculations into various media showed the characteristics of the bacillus typhosus.

A rabbit was inoculated in the peritoneal cavity with 3 c. c. of a bouillon culture diluted with 3 c. c. saline solution. The rabbit died four days later. At the autopsy there was slightly more fluid than normal in the peritoneal cavity, and a slight fibrino-purulent peritonitis especially noticeable upon the surface of the liver. The viscera were not much changed from normal, and there was no pus at the site of inoculation. Smears and cover-slips from the peritoneal cavity showed typhoid bacilli.

A 36-hour bouillon culture from the peritoneal cavity gave the agglutination reaction with the blood from a known case of typhoid fever.

The organism found is now used in the laboratory as the stock culture for making the Widal serum test.

Summary.—A man, aged 42 years, with a chronic enlarged left testicle, developed during a mild attack of typhoid fever an orchitis in the same organ. The corresponding epididymis was enlarged, and there was an effusion into the tunica vaginalis of the right side. The inflammation appeared about the seventeenth day of fever, and the duration was about eight weeks. There was a marked rise of temperature at the onset of the inflammation. A leucocytosis of 14,800 occurred. The inflammation was purulent in character, and the bacillus typhosus in pure culture was obtained from the pus.

A bouillon culture was agglutinated in a dilution of 1 to 40 by the patient's own blood. There was subsequent atrophy of the gland.

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Current Literature.

REVIEW IN SURGERY.

Under the Supervision of Hugh H. Young, M.D., of Baltimore, Assisted by J. W. Churchman, M.D.

INTESTINAL PERFORATION IN TYPHOID FEVER. B. B. Davis, M.D. *Journal of the American Medical Association*, May 21, 1904.

Davis calls attention to the importance to the community of intestinal perforation in typhoid fever by quoting a few figures which are almost startling. About 60,000 people die every year in the United States from typhoid. One-third of these deaths are, according to Osler, due to intestinal perforation, and those who have had most experience with this condition think that 50 per cent. of the cases may be saved by timely operation. In other words, at a low estimate, 8333 people—many of them young males at the heads of families—die every year whom early surgical intervention might save. Operation for this condition was first suggested by Leyden of Berlin in 1884, but Mikulicz the same year was the first to successfully operate on a case.

There are several reasons why this operation has not been more widely done. First, there is the prejudice that typhoid patients cannot stand an anesthetic or a major operation. But, as a matter of fact, they *do* stand them well. Perforation occurs often in mild cases—not seldom after convalescence is established—and deaths from shock are very rare. In the second place, doubt is cast on the value of surgical intervention by the fact that the cases are kept until general peritonitis is present, and this condition, rather than mere perforation, is the one met. But similar handling of appendix cases would give an equally high mortality, and the conditions in typhoid perforation argue not for *no* operation, but for *early* operation. Keen's statistics, it is true, apparently threw a doubt on the value of very early operation, and he thinks that surgical intervention is indicated "at the earliest possible moment, only waiting until the primary shock, if present, has passed away." Others do not think shock a contraindication, and Davis himself says that we should operate at once, combating the shock present, working rapidly, and giving the least possible amount of anesthetic.

The early diagnosis of this condition is by no means easy. Davis thinks that the most marked symptoms are:

1. Pain. Sudden complaint of abdominal pain which persists, or sudden increase of pain which has been present, should be considered a danger signal.
2. Tenderness, usually fixed, oftenest below the umbilicus, and to the right of the median line.
3. Thoracic breathing.
4. Muscular rigidity; almost always present, greatest in the region of the perforation.
5. Shock; small reduction of temperature, feeling of impending calamity, chill, nausea and vomit, anxious face, small rapid pulse. None of these are necessarily present.
6. Leucocytosis; extremely variable and unreliable.
7. Blood-pressure. Crile thinks a sudden rise in blood-pressure indicates typhoid perforation.

As to treatment, a great deal depends on the physician in charge, who should ever remember that perforation is a possibility, and should always be prepared to call for surgical assistance. And the first duty of the surgeon is promptness—promptness in seeing the case, promptness in making the diagnosis, promptness in getting the operation started. When absolute diagnosis is not possible the line of procedure is not so positive. Cushing's dictum is "when in doubt, explore." Osler advises operation in doubtful cases, and Richardson says operation should be done when perforation is suspected rather than demonstrated. It is doubtful if the cases can be diagnosed in the falsely so-called "preperforative" stage. Cases in which general peritonitis has developed should be operated upon unless moribund, but surgical intervention should be resorted to before this condition is present.

The best incision is along the right semilunar line or through the outer border of the right rectus. The perforation is most often found in the lower three feet of the ileum, and next most often in the sigmoid. The hole should be closed by a mattress or running suture of fine silk. It is doubtful if such a formidable operation as resection is ever justifiable, but if numerous perforations are present close together the loop of bowel may be drawn into the wound. Enterostomy has been proposed as a substitute for suture, and Escher of Trieste has had good results with this procedure. The extravasated fecal matter should be removed from the peritoneal cavity by wiping if small in amount, by copious salt irrigations if large and already well spread. The usual toilette with drains is, of course, made. The operation should be done as expeditiously as possible.

Local anesthesia has been used for these cases, but it is apparently not well suited for them. The pain, nervousness, and fright will, as a rule, cause more shock than the anesthetic, and the operation under local anesthesia will require more time. A very small amount of ether suffices.

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TRAUMATIC PYELO-PARANEPHRIC CYST. Bern B. Gallaudet. *Annals of Surgery,* April, 1904, p. 573.

The patient was a male of 15 who had been struck in the abdomen during his twelfth year by the handle of a snow-shovel, but had recovered after a few days from the blow, and had been in good health until two weeks before admission. At this time, while jumping from a shed, he had struck his abdomen on the edge of the roof. The accident was followed by nausea and vomiting, hematuria and persisting abdominal pain. A small swelling in the right abdomen about the level of the umbilicus was noticed on admission. This was dull by percussion. Under hot applications the condition improved for some time, but later increase in abdominal pain and distension indicated operation. Incision was accordingly made, and over a quart of bloody fluid containing several large blood clots was evacuated. A cystic sac extending toward the kidney was found and drained by rubber tubing, a permanent urinary sinus resulting. Several months later the patient suffered a series of attacks characterized by pain, high temperature, delirium, and cessation of flow of urine from the sinus. A second operation was performed, and a cyst found with a thick, dense connective-tissue wall closely adherent to the neighboring paranephric tissue. Its inner surface was covered by flabby granulations and its cavity extended to and into the renal sinus. Nephrectomy and partial ureterectomy were done, but it was impossible to remove the entire cyst wall with the kidney. The kidney on section contained multiple pus foci, but tuberculosis was excluded by microscopic examination. The wound was partially sutured and partially packed, but on account of the subsequent failure of the sinus to close a third operation was done, and the remains of the cyst wall found at the bottom of the sinus. This was removed, and the wound healed perfectly.

This cyst was obviously neither neoplastic nor parasitic. The portion situated in the pelvis of the kidney corresponded to that class of cysts occurring in pre-existing spaces other than alveoli of glands; the extrapelvic portion was a cyst of new formation. Both portions had a common capsule and opened into a common cavity (hence the name "pyelo-paranephric"). From the standpoint of etiology the cyst was traumatic.

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TRAUMATIC ASPHYXIA. REPORT OF A CASE, WITH A STUDY OF THE MINUTE PATHOLOGY AND SUMMARY OF REPORTED CASES. H. H. A. Beach, M.D., and Farrar Cobb, M.D. *Annals of Surgery,* April, 1904.

The patient—a large, muscular German grocer of 30 years of age, who had been in previous good health—was admitted to the Massachusetts General Hospital with the history of having been caught and held by a moving freight elevator one hour before. He had been released after being compressed from three to five minutes, during which time his face became black, his eyes protruded, and blood ran from nose and mouth. He was unconscious for a few minutes after the accident. On admission the face and neck were deeply cyanotic, the skin being dotted with countless blue and reddish-black spots lying close together and separated by very minute areas of apparently normal skin. The demarcation of the cyanosis of the neck from the skin of the chest was quite sharp. The conjunctivae were very red, but there were no retinal hemorrhages. On the second day the temperature rose to 106°, there was bloody expectoration, and the lungs were full of râles, but this condition soon disappeared, and convalescence was uninterrupted. The discoloration rapidly faded out after the third day, the areas of normal skin between the punctate spots becoming larger and wider, and the general color-scheme turning from black to lead color and then gradually to a normal tint.

The gross cause of this condition is admitted to be forcible compression of the chest, extended over some minutes, accompanied by entire cessation of respiration. No especial pathological findings have been reported as characteristic lesions, though patients have been examined by Ollivier, Tardieu, and others post-mortem. Braun, Hueter, Willers, and Vogt have reported cases of this condition, and all have considered the discoloration as due to hemorrhages, extravasations or effusions. This idea of the process as a hemorrhage following a stasis of mechanical origin seemed to have been partially confirmed by experimental work on rabbits. The authors, however, from a microscopical study of areas of involved skin excised from their patient, come to a different conclusion. Every section studied showed normal skin, and in no place were there signs of blood in the tissues outside the vessels. They, therefore, believe the discoloration is due to a stasis from mechanical overdistension of the veins and capillaries, with or without engorgement or a pressure on sympathetic nerves. The sharp limitation of the color to the head and neck is probably to be ascribed to the lack of valves in the jugular and facial veins.

The immediate administration of artificial respiration and oxygen should prove useful when these cases are seen early. Secondary treatment, aside from combating shock, must be symptomatic. On the second or third day pulmonary complications (pyrexia, bloody expectoration, and labored breathing) may appear. This "contusion pneumonia" of Perthes may be expected to subside rapidly, and not to result fatally.

REVIEW IN NEUROLOGY.

Under the Supervision of Robert Reuling, M.D., Baltimore.

Lymphocytosis of the Cerebro-Spinal Fluid. Joseph Fraenkel. *Medical Record,* January 23, 1904, Vol. LXV, No. 4.

As the study of the corpuscular element of the cerebro-spinal fluid has recently been shown to be of considerable value in the diagnosis of certain organic diseases of the central nervous system, the author's work is of special interest, as it includes convincing observations on the subject. He says: "On the basis of their studies Widal and his followers have elaborated the following formula: (1) Increase in mononuclear leucocytes suggests the tuberculous nature of the disease; (2) increase of polynuclear leucocytes (neutrophiles and eosinophiles) bespeaks an acute infectious condition; (3) the presence of endothelial cells points to a mechanical origin of the fluid."

The study of 50 cases led P. Kose to make similar statements. In January, 1901, Sicard, Widal, and Ravaut reported the results of their systematic cytological examinations of the cerebro-spinal fluid of 134 cases. They found lymphocytosis in 17 cases of general paresis, in 6 cases of syphilitic meningomyelitis, in 14 cases of tabes, in 2 cases of multiple sclerosis, and what seems to be an interesting finding in 7 out of 11 cases of herpes zoster. The lymphocytiasis was absent in cases of syringomyelia, old hemiplegia, poliomyelitis, neuritis and other peripheral palsies, Friedreich's ataxia, neurosis, and, what seems remarkable, in cases of compression myelitis.

Widal, Sicard, and Ravaut reported later another series of 37 cases of tabes, in 36 of which lymphocytosis was marked. Schoenborn examined a number of cases in Erb's clinic, and reports a general confirmation of Sicard's results. From eight cases of tabes seven showed marked and one moderate lymphocytosis.

The author reports 33 successful punctures, which included seven cases of tabes, four of general paresis, three of syphilis of the central nervous system, seven of multiple sclerosis, two of paralysis agitans, one case of doubtful paralysis agitans or diplegia, three cases of brain tumor, two of hysteria, one case of poliomyelitis, one with discharge of cerebro-spinal fluid from the nose, one of aural vertigo with peripheral facial palsy, and one of hereditary syphilis without nervous symptoms.

The seven cases of tabes represented mostly cases of long duration. A more or less marked increase of lymphocytes was found in all of them. In some cases only a few—five or six—leucocytes were found in each field; in others they were not countable. In only two polynuclear cells were seen.

Of the four cases of general paresis, leucocytosis was marked in three cases. In one case (a recent case) no lymphocytes were found in the fluid. The polynuclear cells were found markedly increased in only one case.

In six out of seven cases of multiple sclerosis marked leucocytosis was found. In these cases no polynuclear cells were found.

Of the three cases of syphilitic disease of the central nervous system, two showed marked leucocytosis. The relation of the mononuclear to the polynuclear variety seemed here to be in favor of the latter.

In one case of brain tumor, with a clear history of syphilitic infection, leucocytosis was found. In all the other cases the fluid was found free from corpuscular elements.

The author advises an ethyl-chloride spray to minimize the pain while tapping the spine. The most suitable space is between the third and fourth lumbar vertebrae—a line drawn from the highest points of the iliac bones across the vertebral column between the third and fourth vertebrae. He says: "In my experience it is best to introduce the instrument at this height, quite near the middle line, so one can best avoid striking the roots or having the instrument clogged by the same. I have used the Stadelman trochar in preference to an aspirating needle, aspiration being looked upon as not quite safe."

The first few drops of fluid are not collected. If the fluid is bloody, it is best to wait until it clears. From 5 to 8 c. c. of the fluid are collected in a sterile centrifuge tube. Pouring the fluid from one tube to another is to be avoided. The fluid is centrifugated for 10 minutes, then carefully decanted, and by means of a capillary pipette a drop is taken from the bottom for examination. This drop is dried at room temperature, fixed with equal parts of alcohol and ether, stained (Jenner, Goldmark), and examined. It is well to remember Quincke's warning to avoid lumbar punctures in cases of cerebellar disease or disease of the posterior fossa.

* * *

A Case of Facial Paralysis Associated with Herpes Zoster.

E. Hewat Fraser. *The Lancet,* January 2, 1904, Vol. CLXVI, No. 4192.

The patient, a robust, middle-aged man, complained of neuralgic pains in the face and head. Five days later a widespread herpetic eruption appeared over the right side of the neck, spreading up on to the scalp and over the ear on to the lower part of the face. On the neck the rash extended down to the shoulder and over the clavicle on to the upper part of the chest. A typical Bell's paralysis developed on the affected side. The mouth was drawn to the left; the wrinkles had disappeared, and the actions of whistling and winking could not be performed. He also complained of the escape of food from between the teeth on the paralyzed side. On mapping out the eruption it practically corresponds to the whole region supplied by the superficial branches of the cervical plexus (second, third, and fourth cervical nerves), the ear and scalp in the area of the supply of the great auricular and cervical nerves, the front of the neck in the region of the transverse cervical, and the lower neck, shoulder and chest over the distribution of the suprasternal, supraacromial, and supraclavicular branches being covered with herpetic vesicles. The greatest point of pain lay just over the mental foramen. The motor palsy was restricted to the purely facial part of the seventh nerve supply. No palsy of any of the muscles supplied by the fifth nerve could be made out. No drooping of the soft palate or uvula, such as has been described in cases of facial paralysis following herpes, was observed. Taste was quite dull on the affected side of the tongue. Tactile sense was markedly impaired all over the right side of the face and the tongue. The temperature sense was unaffected. In a short time the facial paralysis disappeared almost entirely, so that the author believes that the patient will make a complete recovery. The association of paralysis of various muscles with herpetic eruptions is not uncommon. Many cases of facial palsy after herpes are on record, as is also paralysis of limb muscles—*e. g.*, deltoid—after localized herpetic attacks, while Achard and Castaigne report a case of permanent paralysis of the left pupil following herpes of the ophthalmic division of the fifth nerve.

The author locates the lesion in the present case in the Gasserian ganglion and the second, third, and fourth spinal ganglia, with a neuritis in the corresponding nerves, which spread by direct continuity to the terminal distribution of the seventh nerve, and so produced a temporary facial paralysis.

* * *

A Fatal Case of Chorea Complicated by Endocarditis, Pericarditis, and Nephritis. Augustus A. Eshner. *Medical News,* January 30, 1904, Vol. LXXXIV, No. 5.

The patient, a girl 10 years old, exhibited twitchings of the fingers of the right hand, then of the fingers of the left hand, and next of the right foot. Her father was a neurotic man. One maternal aunt and the paternal grandmother were said to be rheumatic, and two paternal cousins had had chorea. For a month previous to the onset of the twitchings the child had a "bad stomach." She slept well, and was not considered nervous.

On examination the heart was found overacting, and a blowing systolic murmur was audible at the apex. Temperature 100.3°. Pallor was marked. The temperature continued elevated, reaching as high as 102°, the pulse frequently being 120. The heart murmur persisted in spite of arsenic and rest. Later the urine became turbid and showed albumen and a moderate number of leucocytes. Five days later granular and epithelial tube casts in large number were discovered, and a loud to-and-fro friction murmur was audible over the body and at the base of the heart. The patient improved under treatment, but was greatly frightened in consequence of the burning out of an electric circuit in the room in which she lay. Shortly after this accident she became restless and jerky, and speech was greatly interfered with, and the peevishness, obstinacy, and restiveness present were increased. The child became dull and soporose, yet irritable and cross. Sleep was poor and restless. The albumen and casts persisted. The heart symptoms likewise persisted. The temperature fluctuated between 101° and 102°. Now a period of marked improvement followed, all symptoms showing change for the better. The speech gradually returned, the heart murmur and friction sounds became less audible, and as the restlessness decreased the patient was allowed to sit up. On February 7 she walked a few steps, not without difficulty; and she spoke more and better. The action of the heart was rhythmic, though rapid, and the soft systolic murmur at the apex was still audible. The pulse counted 108. Pallor and weakness remained marked features, the former assuming an extraordinary ashen character. Puffiness of the face appeared on February 15, and shortly afterwards the legs became swollen. Dyspnea now developed and became gradually more marked. Death resulted on February 18, apparently as a result of cardiac failure, due, the author supposes, to myocarditis. No autopsy was held.

That endocarditis is a common complication is seen from Osler's collection of 73 fatal cases of chorea, in which 62 cases showed endocarditis. Osler states "there is no known disease in which endocarditis is so constantly found, post-mortem, as chorea. It is exceptional to find the heart healthy." Pericarditis is less common, having been present in 19 of the cases, while nephritis is still less common, although Osler believes it is probably not so rare as has been thought.

* * *

ON THE ACTION OF VENOMS OF DIFFERENT SPECIES OF POISONOUS SNAKES ON THE NERVOUS SYSTEM. George Lamb. *The Lancet,* January 2, 1904, Vol. CLXVI, No. 4192.

While nearly every writer who has specially studied the physiological action of cobra venom considers that that poison owes its lethal properties principally, if not entirely, to a direct action on the nervous system, Cunningham contends that its primary action is on the blood, and that the nervous symptoms which are observed in cobra-venom intoxication are wholly dependent on the action of the poison on the blood. Again, this observer, as a result of his experiments with the venom of daboia Russellii, puts forward the opinion that when this poison causes rapid death it does so entirely by a direct action on the central nervous system. He looks upon its primary action as being that of a strong nerve irritant. It has been shown by one of the authors on a previous occasion that this observation of Cunningham's is not correct, and showed beyond a doubt that all rapid deaths, the result of the injection of daboia venom, were due to a more or less extensive intravascular thrombosis. The observation, in short, recorded in that paper, and in another communication of later date, showed that daboia venom had a marked action on the blood plasma and on the red-blood cells, but they did not show that it had no action on the nervous system.

Up to the present time this problem has been approached by all workers, with few exceptions, from one standpoint only, viz., the standpoint of the observation of the symptoms which result from injections of the various venoms and the observation of gross pathological appearances in fatal cases. (Reviewer, see the work of Flexner, etc.) One of the exceptions to which we have referred above consists in an observation made by Dr. B. Kilvington, viz., that the venom of the Australian tiger snake produces marked chromatolysis of the Nissl granules in at least a portion of the nervous system if the animal survives the injection of the poison for over three hours. Only one part of the nervous system, however, was selected by this author, viz., the cervical enlargement of the cord. The method which Lamb and Hunter have adopted was to combine the observation of the symptoms during life with histological examinations of portions of tissue taken from parts of the central nervous system and from the peripheral nerves of animals, principally monkeys, which had received injections of the venom of a certain species of snake and which had died at varying intervals after these injections. They hoped to find that a relationship existed between the direct action of the poison on the nervous system, and also as to whether in these cases in which evidence of a direct action was present any relationship could be established between the symptoms observed and the histological appearances seen in the central nervous system and in the peripheral nerves. In this way they are investigating the venoms of several of the most deadly of the Indian snakes, among these being naia tripudians (cobra), daboia Russellii (chain viper), bungarus fasciatus (banded krait), and echis carinata (phoorsa). In the course of this investigation many interesting and important points have turned up which may throw light on other neuropathological conditions and which make it necessary that further research should be made along lines we have indicated.

In the present communication only one variety of snake venom was used by the authors. The material which was used in all the experiments was pure, dry and fresh poison. It was collected from healthy living snakes. The poison was obtained either by squeezing the glands or allowing the snakes to bite through a sheet of waterproof cloth tightly stretched over the mouth of a stout wineglass. When the poison had been thoroughly desiccated over lime it was added to the general stock which was preserved in an airtight tube kept from the light. Before the venom was weighed it was reduced to an impalpable powder and again dried over lime. Nearly all workers—Fayrer, Aron, and Calmette—hald that cobra poison is a primary neurotic poison, acting directly on the central nervous system. While this is the general opinion, Cunningham, as mentioned above, believes the primary action of cobra venom is an action on the blood, while the nervous symptoms are secondary to the blood changes. The authors, however, believe their observations show the effect of the action of this venom on the central nervous system.

When a large quantity of cobra venom is injected directly into the blood-stream of an animal death takes place within three or four minutes after the injection. As a rule, muscular twitchings and general convulsions are the only symptoms observed before death. On post-mortem examination the blood is found to be liquid throughout; there is no trace of intravascular clotting to be found anywhere.

The constitutional symptom observed after a subcutaneous injection of cobra venom is a state of lethargy and drowsiness. The head is seen to fall forward, almost immediately to be recovered with a jerk. The eyes are kept half shut, but open suddenly on any stimulation. It is to be noted that there is no preliminary stage of excitement. Then paresis of the extremities becomes apparent, and this is more marked at first in the hind limbs. In man paralysis of the tongue and muscles of the throat soon makes itself apparent; there is loss of power of speech, and the saliva, which is profusely secreted, trickles down the lip. Nausea, vomiting, and retching are common symptoms in man and dogs. The paralysis rapidly advances, becoming more general. The animal is soon unable to move. The breathing still continues, although it may be slow and with much inspiratory effort. Just as the respiration ceases general convulsions may set in and end the scene. This symptom is not, however, observed in all cases.

(*To be continued.*)

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LUMBAGO: ITS LESSONS AND ANALOGUES. Sir Wm. Gowers. *The British Medical Journal,* January 16, 1904.

As the author points out, we have yet no true pathology to describe the condition known as lumbago. All we can do is to call it muscular rheumatism or a myalgia. He points out the difference in the ending of the sensory and motor nerves supplying muscular fibers. The sensory or afferent nerves do not terminate in the muscular fibers, as do the motor nerves; they end in the interstitial tissue between the fibers, and the only ending which has yet been generally found is in the remarkable bodies called "muscle spindles." As far as we know, all afferent impulses from the muscles arise in these, including the pain or cramp and the peculiar pains in lumbago and the allied affections. It is strange that acute pain should be produced through structures which normally give rise to no sensation, pain due either to excessive excitation or to an induced excessive susceptibility. An example of this state where acute pain is produced by morbid action in structures which seem insensitive in health are in the pleura, the peritoneum, and the intestinal wall. Indeed, the last is a pertinent example, because we are quite unconscious of intestinal contraction under normal conditions, and yet its increase, as by a simple purgative, may give rise to intense pain. These facts illustrate the constancy of afferent nerve impulses from all parts, whether we feel them or not, or pain can only be ascribed to the intensification of nerve impulses which are constant in less degree.

The muscle spindles through which contraction and tension of the muscles in health produce unperceived impulses, and when excessively stimulated or rendered oversensitive in lumbago give rise to acute pain, are remarkable bodies. They are long structures lying between the bundles of muscular fibers, narrowed at each end, as their name implies. One or more narrow muscular fibers enter each, and two or more nerve fibers, usually one at the end, one in the middle.

The nerves divide and form a ramification around the muscular fibers, which also divide in the middle region, to reunite before they pass out at the other end. No special nerve endings have been detected. The muscle fibers do not seem to receive any motor nerve according to the balance of evidence. They seem to be small portions of the general muscular substance deflected into this structure. It must be assumed that they share the contraction of the whole muscle, and, as it were, register it by compressing the nerve fibrils within the capsule of the spindle.

Such a nerve ramification, sensitive to the mechanical influence of compression, can be readily conceived as sensitive also to the influence of tension.

If the muscle spindles are the only sensory structures in the muscle—and as far as is known there are no others—it is through them that the symptoms of muscular rheumatism are produced. We might thus conceive lumbago to be a pure affection of the muscle spindles, but we may easily fall into error by regarding the structures through which a disease is manifested as its sole seat. These peculiar bodies seem to belong to the fibrous tissue of the muscle, to that which sheathes and connects the muscular fibers.

Under the treatment of lumbago the author remarks on the generally unsatisfactory results obtained by the use of the salicylates. He believes the greatest good to be obtained is through diaphoresis and rest. He believes in Turkish baths, local hot fermentations, massage and electricity, and especially the actual cautery. The use of liniments is doubtful unless applied with thorough rubbing. In older cases, when the fibrositis has spread to the nerves or joints, superheated air may give good results. A local measure that often does good is the deep hypodermic injection of cocaine, repeated daily for two or three weeks. Probably eucaine would be equally effective.

Society Reports.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD APRIL 18, 1904.

Dr. Osler discussed the surgical importance of visceral crises in connection with skin lesions. He first gave an outline of the principal causes of colic, dividing them into five groups as follows: (1) The intoxications (lead, uremia, and morphia); (2) Functional and organic diseases of the nervous system (hysteria, tabes, etc.); (3) Supradiaphragmatic diseases (pleurisy, pericarditis, angina, etc.); (4) Disease of the abdominal organs; (5) Disease of the pelvic organs.

The first case described was a girl of 17 who had been admitted to the hospital for abdominal pain, which for six months previous to admission had recurred frequently in the left epigastrium and side. An abdominal section had been done, but the condition of the abdominal organs had been found absolutely negative. The patient's kneejoints were swollen and tender, but there was no skin eruption, and examination was negative. She left the hospital well. Two weeks later she returned with recurrence of the pains, with nosebleed, and with one purpuric spot on the left flank. In the Johns Hopkins Hospital a case of hematuria with recurrent "kidney colic," accompanied by erythema and angioneurotic edema, has occurred in the past years, and two other cases of abdominal colic with skin lesions. Several similar cases have been recently reported in the *Journal of Cutaneous Diseases*. The first was a boy, aged five years, complaining of abdominal pain, who was operated on for symptoms of intestinal obstruction. No obstruction was found, but in two places the intestine showed hemorrhagic infiltration, and the next day a marked purpuric rash appeared. The second case, a boy of seven years, with purpura and bloody stools, died. At autopsy, besides an intussusception, hemorrhages were found into the peritoneum. In the third case of severe recurring abdominal pain, congestion of the bowel near the ileocecal valve was found at operation, and two days later a crop of purpura appeared. The boy recovered, but the trouble recurred, bloody stools appeared, and another purpuric rash. The cases may be divided into six groups: (1) Colic with angioneurotic edema (Quincke's disease). This often shows a tendency to occur in families, as illustrated by the Rush family of Bordentown, N. J., in which several generations were affected. (2) Colic with urticaria. (3) Colic with purpura. This symptom-complex, in which abdominal pain, purpura, and arthritis occur, is known as Henoch's purpura. (4) Colic with fugitive erythema. (5) Colic with combinations of skin lesions in the various attacks. (6) Long-continued recurrent colic, with skin lesions appearing very late in the disease. Of 29 cases reported by Osler, seven died, all of a complicating nephritis.

Dr. Cushing referred to a patient who had been admitted to the surgical side of the hospital with pain, tenderness, and a leucocytosis. She was prepared for operation, with the idea that there was some acute abdominal trouble, but a bilateral purpura was discovered accidently, a diagnosis of Henoch's purpura made, no operation done, and patient recovered.

Dr. Atkinson referred to a case of his own in which there was recurrent abdominal pain closely resembling attacks of gallstone or kidney colic. The appearance of a marked erythema, however, made it clear that the case was one of visceral crisis accompanying a skin lesion. He said that he had also seen the condition after the administration of the antitoxin of diphtheria. In this patient a violent erythematous urticaria appeared over the whole body eight days after treatment. With it there was edema in both eyelids and a slight arthritis. The symptoms promptly disappeared.

Dr. McCrae referred to the association in these cases of constipation with the abdominal pain. This was especially noticeable in the first case reported by Dr. Osler, and, as a rule, in these patients the pain disappears when the bowels move. It may well be, if the pathology of the condition is some sort of a hemorrhage into the bowel wall, that the transudation accompanying catharsis gets rid of this exudate and in that way relieves the pain.

Dr. Marshall and *Dr. Knox* reported work which they have recently done on the immunization of the dysentery bacillus by its growth in agglutinating serum. The work was done to see if experimental corroboration could be given to the suggestion made by Dr. Welch in his Huxley lectures that one form of immunity was due to a change not in the cells of the body, but in the invading bacteria themselves. The work was done by injecting pure cultures of the dysentery bacillus into bouillon tubes containing a small amount of serum which would agglutinate these bacilli. It was found by subsequent study of the organisms so treated that the bacteria had been changed so that they could not subsequently be agglutinated by the same serum; in other words, that their receptors had been either lost or so changed that they were no longer susceptible for this agglutinin. Study of the serum itself after centrifugalization showed that the change had not occurred there, for it still continued to clot inoculations of organisms from fresh cultures.

The same experiment was subjected to several modifications in order to test it in every possible way, and control tests were made in every case. The organisms were also studied after transfer through a series of about 18 tubes. The work showed that there is a type of immunity due to a loss of susceptible receptors. The most frequent type, however, is, of course, that in which immunity is due to an overproduction of antibodies. These experiments may explain the existence of so-called paratyphoid and paracolon bacilli, which would then be understood to be merely immunized forms of the organisms themselves.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SECTION ON CLINICAL MEDICINE AND SURGERY.

MEETING HELD MAY 20, 1904.

Dr. Carey Gamble showed a case exhibiting skin lesions in connection with visceral crises. The patient was a German, 41 years old, who had had smallpox at 12, no rheumatism, and an otherwise negative past and family history. He had, however, had between his 9th and his 18th years several attacks characterized by great abdominal pain, distension, vomiting, and delirium. The pain usually lasted for four weeks, and the delirium occurred on and off during that time. There were no skin eruptions. At 18 he entered the army, and since then had had no illness up to admission except a left-sided pneumonia in 1901. In April he was taken with a dry cough, pain in the right chest, and swelling of the right arm. A hemorrhagic rash appeared over the body, there were suppression of the breath sounds, a few râles, and skodaic resonance in the right axillary line. Urine was negative. A little later he was taken with great pain in the arms and shoulders, vomiting, and epigastric pain. The gums became spongy, there was distension of the right side of the abdomen, and the patient lost perfect control of the bladder. Albumen, cast, and some blood appeared in the urine. There were pains over the heart. The hemorrhagic spots in the back became necrotic and sloughed out, leaving areas of ulceration. The onset of this case was much like appendicitis, but an exploratory operation was not done because the rash had previously appeared and because the patient, being weak and of an obvious hemorrhagic diathesis, surgical treatment was thought unwise. The condition present was that described recently by Osler, who called attention to the group of cases characterized by skin lesions in association with visceral crises.

Dr. Knox reported a study of 110 cases of dysentery seen at the Mount Wilson Sanitarium. He called attention to the various theories which have been advanced to explain this disease, and emphasized the absolutely fanciful nature of "miasms," "summer flukes" and "infectious states of the atmosphere," etc. More accurate knowledge of summer diarrhea has led to a more rational treatment, but the results of Shiga's serum at the Mount Wilson Sanitarium, though not absolutely negative, have been disappointing, and prophylaxis seems to offer most.

Of the cases studied, 83 were under one year and only six over two years. Most of the cases occurred in July, and there was always a sudden increase after a period of excessive heat. Ten per cent. of the children were breast-fed and 24 per cent. had taken condensed milk—significant figures from the standpoint of etiology. The hygienic surroundings of none were ideal. In only four cases were there other children with the disease in the same house. The dysentery bacillus, though never isolated from water, may be carried by it just as the typhoid bacillus, which, though impossible to find in water, is carried in that way. Many of the breast-fed and condensed-milk-fed babies in this series had been given unboiled water, and this may have been the source of the infection. The prognosis, as given by a study of the mortality of Dr. Knox's cases, is good after the first year, previous to which time practically all the deaths occur.

Dr. Edsall read a paper on the post-typhoidal psychoses in children. He referred to the great vagueness in the literature as to this subject, the only comprehensive work attempted having been that done by Paris students for their theses. The frequency of this condition, the character of the psychosis, and the prognosis are the points of especial interest. As to frequency, the idea among clinicians of its great rarity is an erroneous one, 80 cases being easily found in the literature. As to character, it is commonly stated that it is a mania, but Dr. Edsall found in his 80 cases 40 of mania, 18 of dementia, and 22 of melancholia. A girl of nine in his practice with a severe typhoid, and living on low diet because of hemorrhages, developed delusions and symptoms of meningitis, for which lumbar puncture was done. She recovered from the fever, but was left with a psychosis characterized by irrelevant fears, delusions of sight and hearing, exaggerated religious emotions, and double personality. Her condition gradually improved. She is now quiet and reflective, but otherwise well. As to prognosis, the clinicians usually say that the case will recover, the psychiatists that it will not. In this series most of the melancholies got well, but 20 out of 65 cases remained persistently insane, the majority being demented. Dr. Edsall feeds his cases well whenever mental symptoms occur as a prophylaxis against dangerous psychosis.

Dr. Mitchell thought there might be some relation between the period of starvation and the incidence of insanity, and suggested that studies in metabolism might throw some light on the condition. Possibly sex might be an etiological factor. He reported having seen hysterical attacks after typhoid (aphoria, paralysis, blindness, etc.).

Dr. Reuling said that dementia precox frequently follows typhoid, and every slight psychosis should be carefully watched.

Dr. Futcher called attention to the frequency of a neuropathic family history in the adult cases, and suggested that this might be found also in children.

Dr. Edsall said that no relation could be shown between the severity of the disease and the incidence of a psychosis, and that more boys than girls are affected—contrary to what we should expect. The influence of heredity has not been carefully studied, but Morel reported a series of eight children from one family all developing typhoid, followed by persistent psychoses. Four of these were maniacal and four demented.

Book Reviews.

Biographic Clinics. Volume XI.—The Origin of the Ill-Health of George Eliot, George Henry Lewes, Wagner, Parkman, Jane Welch Carlyle, Spencer, Whittier, Margaret Fuller Ossoli, and Nietzsche. By Dr. George M. Gould, M.D. Philadelphia: P. Blakiston's Son & Co. 1903, 1904.

In the second volume of "Biographic Clinics" Dr. Gould has continued his steadfast and able advocacy of the importance of uncorrected or improperly corrected errors of ocular refraction in the causation of many cases of obscure and chronic illness, particularly of a nervous type. That this is a most important medical truth few scientists or intelligent laymen will deny after a careful reading of these impressive theses. Nevertheless, ophthalmologists, neurologists, and internists of high standing have differed from Dr. Gould more or less radically, and a few have spoken scornfully regarding what they call his "extremism."

That the facts which he emphasizes have been repeatedly set forth in previous medical literature is quite true, but that they have not made the general impression commensurate with their importance cannot be denied. Such being the case, no other course is open to the author of "Biographic Clinics" but one of extreme emphasis. With an inimitable virility of style and speech he conveys his deep feeling upon the subject. No one can doubt his earnestness, and it is plain that his arraignment of the inertia of his professional brethren is the outcome of a painful sense of duty, which only a brave man and true scientific enthusiast would assume. A vascillating, apologetic and ambiguous brief would have fallen as flat as its predecessors.

Even though we grant that his course has been extreme, twice the extremity of statement would be warranted in indelibly impressing upon the medical profession and the world at large the vast significance and importance of the truth. To publicly and emphatically declare that a prominent patient has failed to receive the proper medical treatment, and has been left to hopeless invalidism after the combined treatment of prominent internists, ophthalmologists, and neurologists, is an attitude that few would have the temerity to assume. Nevertheless, Dr. Gould has a striking justification for his statements in the unbelief, skepticism, and denial which he has encountered.

There is no doubt that the smallest appreciable amount of astigmatism neglected is capable of producing in persons of neurotic tendency, using their eyes excessively under unhygienic conditions, profound and obscure reflex symptoms, very often without appreciable ocular evidences. The proper correction of such errors of refraction requires not only technical education and skill, but a living faith in its importance. Without the latter no man, no matter what his auxiliary attainments may be, is competent to diagnose or direct treatment in this class of cases. Unfortunately, the European physicians, who have until recently dominated medical thought, have not as yet fully awakened to the importance of the art of refraction that owes so much to the patient scientific revelations of their great predecessors. In comment on the total neglect to recognize the element of eyestrain in Richard Wagner's case, Dr. Gould pathetically says that he was kept in wet packs and various other popular treatments with an absolute indifference to the fact "that his left eye was turned up and out and his forehead concentrically wrinkled to get the lid away from the pupil, * * * and this was in the land of von Graefe and in the fatherland of modern medical science!" Not only is skill and faith on the part of the ophthalmologist demanded, but also the intelligent co-operation of skilled opticians, as Dr. Gould has graphically set forth in his final chapter on the many reasons why glasses do not give relief. This chapter alone is sufficiently valuable to warrant an extensive notice in all ophthalmologic literature.

Some critics have spoken of the possible harm such dogmatic and over-emphatic utterances as Dr. Gould's may do. To the reviewer such a statement is unwarranted and illogical. All that the essayist contends is that in all cases of chronic and obscure illness the patient first of all be given the benefit of a careful ocular examination in the hands of a competent ophthalmologist who has the proper conception of the multiformity of the effects of eyestrain, and that each patient's eyes be repeatedly examined for changes in refraction that are likely to occur at more or less brief intervals throughout life. There is no doubt that the amount of local or constitutional reflex disturbance is in great measure dependent upon the general debility, neuropathic tendency, or scholastic or clinical habits of the patient. Upon this fact is based the inference that, as many persons with complex or major ametropia are never materially inconvenienced and do not require the aid of glasses until the presbyopic age, the prescription of lenses is greatly overdone in the present day. This seems, indeed, small ground for condemning the thousands of sufferers from eyestrain to a life of misery and partial incompetency.

Dr. Gould has chosen wisely in making biographic studies of the lives of celebrities known to be chronic invalids without ascertainable causes for their illness. Life-histories of such persons set forth in such a masterly and comprehensive manner are of universal interest at all times, but there is beyond all this a truth of wide significance. In the closing paragraph of his essay on "Eyestrain and Civilization" Dr. Gould very wisely says: "It is not only and chiefly its geniuses that concern medicine and a nation. When we consider the total effect of this factor civilization has tremendously and suddenly increased eyestrain by a thousand occupations which demand near work with the eyes. Printing, schools, and city life give the matter an entirely new aspect. Sewing women, artists, artisans, machinists, musicians, clerks, typewriters, engineers, pupils, all the professional and business classes—these are the workers, spurred also to a continuousness of labor such as has never been demanded, upon whom the obligation rests. The nation and the national medical profession that forgets or ignores this overlooks a highly important element of progress. And it is all the more effective because it conditions the peculiar means whereby modern civilization advances." W. L. P.

International Clinics: A Quarterly of Illustrated Clinical Lectures and Especially-Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and other topics of interest to students and practitioners by leading members of the medical profession throughout the world. Edited by A. O. J. Kelly, A.M., M.D., with the collaboration of William Osler, John H. Musser, James Stewart, John B. Murphy, A. McPhedran, Thomas M. Rotch, John G. Clark, James J. Walsh, A. W. Ballantyne, John Harold, Edmund Landolt, Richard Kretz, with regular correspondents in Montreal, London, Paris, Berlin, Vienna, Leipsic, Brussels, and Carlsbad. Volume IV, thirteenth series. Philadelphia: J. B. Lippincott Company. 1904.

The present volume of this excellent quarterly contains the usual number and variety of articles by competent and distinguished men. Of four articles under the head of Treatment we may mention the first two as of special interest, one by James Tyson on the "Clinical Features and Treatment of Ulcer of the Stomach," the other by John H. Musser on the "Treatment of Pneumococcic Infection of the Lung."

Under the head of Medicine one finds a charming lecture by Sir Dyce Duckworth on the "Importance for Students of Physiognomical Diagnosis in Disease," in which the lecturer endeavors to offset the modern tendency of students to neglect the cultivation of skill in the use of unaided senses and to rely too much upon the laboratory aids in diagnosis. There are nine other good articles in this part of the book.

Under the head of Surgery there are six articles on thrice as many subjects.

One more article may be mentioned as worthy of particular note, namely, that of Joseph McFarland, which closes the volume. His paper is a very good one and concerns a topic of perennial interest, "The Present Status of Our Knowledge of Immunity."

MARYLAND MEDICAL JOURNAL.

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BALTIMORE, AUGUST, 1904

THE DOCTOR AND THE PATENT-MEDICINE TRADE.

THE *Journal of the American Medical Association* reprints in its editorial columns on July 16 part of a letter to *Printer's Ink* on the present activity of the United States Postoffice Department in suppressing objectionable advertisements in the secular press, particularly advertisements of a quasi-medical character. The *Journal* makes no comments on the views of the writer, although these views suggest most unflattering reflections. The writer is a druggist doing a large prescription business, and he believes that the patent-medicine business will hold its own for years to come. Three-fourths of the physicians' prescriptions coming to his own pharmacy, he says, are for proprietary remedies. He has three skilled pharmacists in his employ, but 75 per cent. of his prescriptions could be just as well filled by a soda-water clerk. The patent medicine of the future, he says, will be advertised only to doctors. "Some of the most profitable remedies of the present time are of this class. They are called *proprietary* remedies." All of us are aware that extremely few nostrums are patented nowadays, and many of us suspected the proprietary remedy to be an old offender with a new alias.

Some members of the profession will be vastly interested in this druggist's testimony to the particular adaptability of the physician to tout for nostrum venders. He says: "For one physician capable of prescribing the precise medicinal agents needed by each individual patient there are at least five who prescribe these proprietaries." The writer's statistics are perhaps not exact. If he had said that a majority of physicians habitually prescribe proprietaries in preference to carefully-considered formulae no one would call for a division on the question, but when he says that but 16 per cent. of practicing physicians are "capable" of prescribing precisely the needed agents, those who are responsible for the qualifications of present-day physicians ought for dignity's sake to make a protest. Perhaps the pharmacist might concede the ability of 20 per cent. to write good formulae, and, being pressed heavily, he might allow that another 30 per cent. can prescribe accurately, but do not. Further than this it would probably be unwise to contend, for certain it is that a majority of prescriptions at the present time call for proprietary remedies. Perhaps this is only another way of saying that one-half of the prescriptions written are wholly unnecessary. There is a kind of profit for the patients of the present generation and a sort of economy for the physician in the hand-me-down pharmacy. Why should physician, pharmacist or patient spend time, skill or fortitude on "tonics" and "builders?" It is not certain that he is the laziest or least capable man who prescribes a "builder" in the original bottle. It is a bit wearying to contend against the popular demand for "builders." The "original-bottle" prescriber is the very best friend of the drug-store man. In this way, he says, the names of the "remedies" (remedies, mind you) "get abroad to the general public, and I have no hesitancy in saying that for every bottle sent out of our prescription department we sell six over the counter without prescription." Contemplate these statistics! Eighty-four per cent. of physicians' prescriptions are compounded in the druggist's sales to six times their original number. The pecuniary results to the physician are 2½ per cent. of instances in which he has a right to a fee and may get it, 14 per cent. of instances in which he may get a fee not certainly due him, and 83 per cent. of instances in which there is no graft.

The outcome of the present crusade against patent medicines promises to be that the advertising will all be done through the doctors. "The medical papers will reap the harvest, and the physician himself, always so loud in the denunciation of patent medicines, will be the most important medium of advertising at the command of the proprietary manufacturer. In fact, he is that today."

Very nearly true are the observations of this correspondent of *Printer's Ink,* and perhaps his presage of a harvest to medical journals may come to pass.

THE PROBLEM OF VENEREAL DISEASES.

This perplexing problem is now seriously engaging the attention of the medical profession in America. The prevalence and prophylaxis of the venereal diseases has been carefully considered at each of the last three conferences of State and Provincial Boards of Health of North America. In the discussions by this body of professional hygienists the dominant note has been that of inquiry. The most earnest desire for practical suggestions was manifest at all the meetings, but no acceptable suggestions were forthcoming. All the prophylactic and restrictive methods in use or proposed were considered, but none of them seemed to impress these practical men as promising good results in American practice. It is, however, a hopeful sight to see this body of administrative men returning to the subject year after year.

In the American Medical Association a special committee on venereal diseases was created three years ago. The second report of this committee was presented at the recent Atlantic City meeting as part of a symposium in the Section on Hygiene and Sanitary Science. One cannot say that this report was a very helpful thing, though it chronicled the more or less thoughtful attempts of various sanitary authorities to undertake the restriction of venereal diseases. Among the contributers to this symposium were Morrow of New York, Kelly of Baltimore, Bulkley of New York, Tuley of Nashville, J. T. Johnson of Washington, Jackson of Denver, Kober of

Washington, and Holton of Brattleboro. Of them all, the last named only has practical experience in public-health work. Naturally, such a group of men could do little more than try to prepare a groundwork of prophylaxis, and in this they got but little further than to state the ethical relations of the problem. Kelly, indeed, confined himself to this aspect of the subject, and it was interesting to note that a majority of the speakers held substantially the same ground, though they did not make the same or any special plea, as Kelly did, for square dealing with the problem.

If the sentiments of the American medical prrofession can be gauged, as it probably can, by the utterances of Kelly, Morrow, and Kober, the prophylaxis of the venereal diseases, in order to have the support of the profession, must conform to a high standard of public morals. As Kelly said, "We cannot afford to be practical at the sacrifice of principle." This must be the point at which the professional hygienists are halted, and it is somewhat significant that none of these officials has spoken up in favor of any of the methods which apparently please their confreres across the water. It is said to be a favorite resort of reformers in America, as elsewhere, when confronted with an insistent but perplexing question, to pass a law and then take up another subject. Few and ill-starred have been the attempts in this country to make laws on this subject after European models. Perhaps the American conscience has a special sensitiveness concerning the venereal diseases.

The discussions at Atlantic City cannot be said to have brought forth hopeful, practical suggestions, but they were interesting, and, in a way, useful, nevertheless. One could hardly miss the impression that for an intelligent consideration of the subject the necessary data are lacking. No one is able to show in a convincing manner that the venereal infections have any public importance comparable to that of the other infections. Time-worn statistics were quoted and requoted, but no thoughtful person has or ever had any confidence in them. Indeed, the cause is probably injured, rather than helped, by the repetition of ill-considered statements such as those, for instance, of Noeggerath. Except for armies and navies, there are no reliable statistics of the prevalence of gonorrhea or syphilis, and thoughtful people will not draw conclusions as to these diseases in civil life from their incidence upon soldiers and sailors. One is inclined to believe that the most promising move toward a solution of this vexed problem, perhaps the essential step at this juncture, is a careful statistical study of the manifold relations of syphilis and gonorrhea. Such an undertaking is difficult, but not impossible. A few determined men can accomplish it. A great store of information is available and can be gathered from every quarter, provided the materials are wanted by competent and trustworthy students. The actual prevalence, at any given time, of syphilis and gonorrhea in the acute stages is not excessively difficult of approximate determination. But far more important that this is a careful study of the secondary and remote results of these infections. Everyone knows what notebooks are richest in data on these points, and it is certain that enough of this information can be secured to furnish the mass of reliable statistics necessary to a successful move forward in the prophylaxis of venereal diseases.

Medical Items.

THE Hospital for Consumptives at Towson has received from Mrs. Nelson Perin a gift of money sufficient to support six patients.

THE Health Commissioner of Baltimore expects 30,000 vaccinations to result from the work of his special squad of vaccine physicians.

IT is reported that the members of the Russian sanitary service leaving for the seat of war all received preventive inoculations against dysentery and typhoid fever.

AT the recent elections in France 23 physicians were candidates for the mayoralty in as many cities. Only two of the 23 medical candidates were defeated.

HARVARD UNIVERSITY recently conferred the degree of doctor of laws upon Dr. Wm. Osler, and Yale conferred the same honor upon Dr. W. S. Halsted. Dr. Halsted delivered the address to the graduates of 1904.

THE city of Buffalo has commenced work on the new municipal hospital for contagious diseases. The new hospital will cost $50,000. Opposition to the site on Ferry street was overcome some months ago. Baltimore next?

THE antivaccinationists have had a setback recently in California when a case from San Diego county was settled by reaffirming the constitutionality of the act entitled "An act to encourage and provide for a general vaccination in the State."

CLEVELAND is to have an antituberculosis dispensary. It is to be established by the trustees of Western Reserve University in connection with the medical school. The Associated Charities of Cleveland and the Association of Nurses are co-operating in the plan.

DR. WM. C. BOTELER of Frederick, Md., desires to inform the readers of the JOURNAL that he can recommend any German-speaking physician to one or two first-rate locations in South Dakota, where doctors are well paid and have a wide field of practice.

THE Association of Surgeons of the Baltimore & Ohio Railroad met in the Hamilton Hotel, St. Louis, on June 29 and 30 and July 1. Dr. H. S. Hedges of Brunswick, Frederick county, Maryland, was elected president of the Association.

JULY 4 was less noisily celebrated in Baltimore this year than for many years past, and the chapter of accidents was relatively brief and unimportant. Dr. H. S. Jarrett of Towson suffered a painful injury of the hand by the explosion of a cracker.

THE *Sanitarian* has been sold to the *Popular Science Monthly*. The August number of the *Monthly* contains two articles by physicians. Dr. John B. Huber of New York has an article on "The White Plague," and Dr. George M. Gould of Philadelphia a paper on "Dextrality and Sinistrality."

A CONTAGIOUS-DISEASE hospital at Aubervilliers, near Paris, was burned recently as the most satisfactory way of removing the old building. It was a wooden house, had been in use since 1884, and its sanitary condition had become bad beyond remedy. The people had not been advised that the hospital was to be destroyed by fire, and when the conflagration broke out great excitement ensued. The fire department was in charge of the affair and had lively work to keep the flames within the prescribed bounds.

THE Church Home and Infirmary will make extensive improvements. A new building is to be erected of brick, three stories in height. The third story will accommodate medical cases and will have a large sun parlor. The second story will provide a home for 30 nurses. The first floor will contain bathrooms, a refrigerating plant, and storerooms. The cost is to be about $40,000.

THE list of notifiable diseases has recently been revised and enlarged by the Board of Health of Philadelphia. The list now includes cholera, yellow fever, malarial fever, typhoid fever, typhus fever, scarlet fever, smallpox, chicken-pox, diphtheria, cerebro-spinal meningitis, measles, rubella, whooping-cough, tuberculosis, pneumonia, erysipelas, puerperal fever, plague, trachoma, leprosy, glanders, tetanus, rabies, and anthrax.

THE Johns Hopkins Hospital will utilize $10,000 of the Henry Phipps donation for the construction of a dispensary for tuberculosis. Besides receiving treatment at the dispensary, patients will be visited at their homes for the sake of bringing about proper hygienic conditions in the home. The Association for Improving the Condition of the Poor has agreed to co-operate, and thus proper diet will be secured.

THE Thomas Wilson Sanitarium is operating five milk dispensaries in Baltimore, where for 10 cents a day three pints of properly-modified milk can be obtained for feeding infants. Each dispensary has a physician and a nurse in attendance, and a card properly executed by any practicing physician asking for a specified modification, and representing that the family is unable to provide proper food for the infant, secures a daily issue of milk as long as it may be needed.

THE city of New York will invest $10,000 in an inquiry as to the contagiousness of pneumonia. The number of deaths from pneumonia during the last year has been very large and peculiarly distributed in locality. The question of house disinfection is up, and Health Commissioner Darlington wishes to first settle the question as to the contagiousness of pneumonia. It might be a profitable venture to invest a month's time in an inquiry whether pneumonia has really caused an excessive mortality in the past few years. It is said that Drs. Wm. H. Welch and Wm. Osler have been or will be asked to serve on this commission.

ON October 1 Robert Koch will retire as director of the Institute for Infectious Diseases at Berlin. He retires with the full salary of a professor, and may lecture or not as he pleases, having been made by the government an honorary professor and member of the Academy of Sciences. Only three such distinctions have been previously conferred by the Prussian government—Virchow held one, and the two living scientists, Anwers the astronomer and Van t'Hoff the chemist, hold similar honors. Koch's successor as director of the Institute will be Gaffky of Giessen, whose work in bacteriology and hygiene has long since gained him an international reputation.

THE thirtieth annual session of the Mississippi Valley Medical Association will be held at Cincinnati, Ohio, October 11, 12, 13, 1904, under the presidency of Dr. Hugh T. Patrick of Chicago. The headquarters and meeting places will be at the Grand Hotel. The annual orations will be delivered by Dr. Wm. J. Mayo of Rochester, Minn., in surgery, and Dr. C. Travis Drennen of Hot Springs, Ark., in medicine. Request for places upon the program or information in regard to the meeting can be had by addressing the secretary, Dr. Henry Enos Tuley, Louisville, Ky., or the assistant secretary, Dr. S. C. Stanton, Masonic Temple, Chicago, Ill. The usual railroad rates will be in effect.

DR. J. FUSSELL MARTENET died at Johns Hopkins Hospital on July 19 of typhoid fever. Dr. Martenet was 46 years of age and a graduate of the University of Maryland, class of 1880. He was medical director of the order of the Shield of Honor. For six years previous to 1902 he was State vaccine agent. The Baltimore County Medical Society at its regular monthly meeting on July 21 passed the following resolution of regret:

"*Resolved,* That in the decease of Dr. Jacob Fussell Martenet this association has lost one of its faithful members, and that the community will miss a conscientious and careful physician.

"JOSEPH E. GICHNER, M.D.
"R. C. MASSENBERG, M.D.
"HENRY A. NAYLOR, M.D.
"*Committee.*"

THE weekly postal-card reports of prevailing sickness in Michigan, which have for 25 years furnished the State Board of Health regular information concerning the kind, but not the amount, of prevailing sickness, have of late given some idea of the prevalence of syphilis and gonorrhea. The postal cards, supplied to a selected list of observers in all parts of the State, bear a list of some 29 diseases, and the inquiry is supposed to concern only the diseases included in that list. The observer simply notes the prevalence or absence of each disease in his own practice during the week, no questions being asked as to the number of cases or the identity of the patients. Syphilis and gonorrhea were not formerly named upon the inquiry card—were not, indeed, included in the inquiry until about a year ago. This accounts for the late appearance of reports on these diseases, and perhaps reluctance of the observers to note the presence of these diseases accounts for the lapse of months before gonorrhea and syphilis rose to importance in the list. In the 24 weeks previous to July 1 gonorrhea was exceeded by but five of the listed diseases and syphilis by but nine. This does not mean that but five diseases exceeded gonorrhea and but nine exceeded syphilis in the number of persons affected, but that syphilis and gonorrhea had the rank indicated in the number of localities reporting the presence of one or both these diseases. Of the localities reported upon 27 per cent. reported gonorrhea as present and 22 per cent. reported the presence of syphilis.

MARYLAND

MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 9 BALTIMORE, SEPTEMBER, 1904 Whole No. 1036

REMARKS ON THE ETIOLOGY AND TREATMENT OF DIABETES MELLITUS.

By Thomas B. Futcher, M.B. (Tor.),

Associate Professor of Medicine, the Johns Hopkins University.

READ BEFORE THE CLINICO-PATHOLOGICAL SOCIETY OF WASHINGTON, MAY 3, 1904.

It is not my intention this evening to make any attempt to cover fully the etiology and treatment of this disease. The subject is such a large one that time will not permit me to do so were it my wish. I hope, however, to bring out some of the more important points in connection with the etiology and treatment. In order that the causation of the disease shall be thoroughly understood, it is necessary first for us to have a clear conception of the processes which take place in the body under conditions of normal carbohydrate metabolism, and I propose first to give a brief account of the changes which starches and sugars normally undergo in the healthy individual.

NORMAL CARBOHYDRATE METABOLISM.

As you are fully aware, the most important carbohydrate of the food is starch. By the action of the diastatic ferments, ptyalin and amylopsin, this insoluble starch is converted by successive stages or simultaneously into soluble starch (amidulin), erythrodextrin, achro-odextrin, isomaltose, and maltose. As these products pass through the intestinal wall and into the portal vein they undergo further changes into glucose or dextrose. Other carbohydrates taken in the food are cane sugar, milk sugar, and cellulose. Cane sugar, or saccharose, is split up in the alimentary canal, owing to the action of acids, ferments, and bacteria, into its two components, grape sugar and fruit sugar, and when ingested in moderate amounts it is absorbed as such. Only when it is taken in large quantities does it pass unconverted into the portal blood. Fruit sugar, or levulose, which is present in ripe fruit and in honey, is taken into the portal blood unchanged. Milk sugar, or lactose, also passes unchanged into the blood. Cellulose is probably never absorbed. Thus the portal vein carries from the intestinal wall towards the liver a stream of carbohydrates varying in composition according to the nature of the food taken. These consist of glucose, dextrose, levulose, lactose, saccharose, and traces of dextrin and maltose. The richness of the portal blood in carbohydrates naturally varies according to circumstances. In dogs that are fasting and in those that are fed on flesh and fats the amount is between 0.10 and 0.15 per cent. (von Noorden), while in animals fed on carbohydrates von Mering has found that the quantity may be increased to 0.4 per cent.

What becomes of these absorbed carbohydrates? The work of Claude Bernard and subsequent investigators furnishes an answer to this question. The more recent work of physiologists teaches us that we must still accept Claude Bernard's glycogenic function of the liver. So long as the quantity of carbohydrates, passing to the liver by way of the portal vein, remains moderate in amount it matters little whether these carbohydrates be in the form of grape sugar, milk sugar, fruit sugar, or of any other kind; the result is the same. We must remember, however, that by far the largest proportion of the carbohydrates, as they pass from the intestinal tract towards the liver, is in the form of glucose or dextrose. As the portal blood passes through the liver the hepatic cells fasten on to the carbohydrates, and dehydrate the glucose and other sugars, and convert them into glycogen, which becomes stored up within the cell bodies either as such or probably also in loose combination with albumen. The liver, therefore, acts as a reservoir for the carbohydrates, and may store up as much as 14 per cent. of its own weight of glycogen. This function of the liver is an extremely important one, as it is by the means of the interposition of this glycogen reservoir that the amount of sugar normally circulating in the blood is regulated. Analyses for sugar in the blood in the hepatic veins and in the various arteries throughout the body have shown the percentage to vary within very narrow limits—namely, from 0.1 to 0.2 per cent. It is readily seen, then, why it is that shortly after a full meal the circulating blood does not contain a larger quantity of glucose than it does at other periods during the day. As the system requires the carbohydrates for the production of heat and energy, the liver cells gradually retransform the glycogen back again into glucose, which passes into the general circulation by way of the hepatic veins, keeping up the narrow percentage limits of glucose in the circulating blood that have been already mentioned. In other words, the liver is a reservoir, which regulates the amount of sugar which is permitted to flow into the systemic circulating blood. The glycogen of the body, however, is not alone contained within the liver. The muscles also have the power of storing it up and probably also of elaborating it. The glycogenic function of muscle has been demonstrated directly by Külz, who has shown that the isolated muscle, irrigated with an artificial supply of blood, to which dextrose has been added, is capable of transforming the dextrose into glycogen, as shown by the increase in the latter substance in the muscle after irrigation. It is estimated that the amount of glycogen contained in the whole muscular system about equals that present in the liver.

Although the glycogenic function of the liver has received rather strong opposition in certain quarters, particularly from Pavy, yet the leading physiologists still support this theory. I shall not take up here the objections which have been advanced against this function of the liver and this disposition of the carbohydrates.

Whereas the carbohydrates in the circulating blood are derived mainly from the carbohydrates ingested in the food, it is now an established fact that carbohydrates can be formed from proteids. Pavy believes this to be due to a splitting-off process, while Pflüger holds that there is a complete decomposition of the albumen molecule and a subsequent building up of the carbohydrate molecule. Minkowski maintains that out of every 100 grams of albumen decomposed in the body 45 grams of carbohydrate are formed. In this way glycogen can be manufactured in the liver from the carbohydrates derived from the proteids ingested.

FATE OF THE CARBOHYDRATES.

I. *In Ordinary Nutrition.*—While carbohydrates formed from the carbohydrates and proteids of the food are always on hand for the use of the organism, they are always in demand. They are consumed by the body cells, chiefly those of the muscles, and by their combustion produce heat and energy. Owing to the fact that we have two reservoirs, the liver and the muscles, storing up carbohydrates, and to the fact that normally there is no loss of sugar in any of the excretions, except in the urine in minutest traces, the amount of grape sugar remains constant in the blood, notwithstanding the varying supply. The deviation from these two relations existing under normal conditions of nutrition may occur in one of two ways—(1) the supply of carbohydrates may be insufficient; (2) the supply may be greater than is required.

II. *When the Supply of Carbohydrates Is Insufficient.*—What happens when an insufficient supply and an increased demand of carbohydrates occurs, as for instance, when but little food is taken and hard work is performed? For a few hours or days the amount of glycogen in the liver is drawn upon. Eventually, however, the supply of carbohydrates in the liver and muscles becomes almost exhausted, yet the analysis of the systemic blood shows that the percentage of sugar remains within the normal limits—that is, between 0.1 and 0.2 per cent. Under such conditions the organism does not suspend the production of sugar, but, as is now generally believed, draws upon the fat deposited in various parts of the body, transforming it into carbohydrates, and thus making up for the diminished ingestion of the latter. This fat, however, must be converted into a form that can be easily used by the organism. That grape sugar is the form of carbohydrate to which the fat is converted is fairly conclusively proved by the fact that the grape sugar in the blood remains in constant percentage, notwithstanding the deficient ingestion of carbohydrates in the food. The liver is believed to be the organ where this transformation takes place. Von Noorden regards the facultative formation of sugar from fat to be an absolutely proven fact.

III. *When Carbohydrates Are Ingested in Excess.*—The fate of the carbohydrates in this case depends on circumstances. Within certain limits the excessive amount can be stored up as glycogen in the liver and muscles. The limit of this storage is evenaully reached, however, as it is believed that the human organ can store up only about 300 grams of glycogen (von Noorden). What happens with the excess of carbohydrates depends upon whether there is a sudden flooding of the system or whether there is a more moderate overingestion lasting a series of days. When the latter condition exists the excess of carbohydrates is disposed of by the organism converting it into fat, which is stored up in the connective and tissues throughout the body. The conversion of carbohydrates into fat takes considerable time, so that when there is a sudden flooding of the system with carbohydrates some of the excess is disposed of by the elimination of a certain amount of sugar in the urine. We have seen that the blood normally contains between 0.1 and 0.2 per cent. of grape sugar. When, however, there is a sudden ingestion of an enormous amount of carbohydrates the liver and muscles cannot store it all up as glycogen, nor can the organism convert it all into fat. The result is that the blood becomes overcharged with grape sugar—that is, it contains more than 0.2 per cent.—and a condition of hyperglycemia is produced. As soon as the percentage of sugar in the blood reaches over 0.2 per cent., the kidneys, which normally excrete the minutest trace of sugar, begin to eliminate the excess, with a result that we have produced what is known as "alimentary glycosuria." This is purely a physiological process and has nothing to do with true diabetes mellitus. It is important for the physician to remember that such physiological glycosuria may occur, and that diabetes and alimentary forms of glycosuria are often confounded.

It may be well here to consider the so-called "assimilation limit" of the organism for various carbohydrates. By "assimilation limit" one means the amount of any particular carbohydrate that an individual can take at a single dose on an empty stomach without the appearance of that particular carbohydrate, or some carbohydrate transformed from it, in the urine. Milk sugar appears in the urine after the ingestion of more than 120 grams, cane sugar after more than 150 to 200 grams, fruit sugar after more than 200 grams, grape sugar after more than 200 to 250 grams (von Noorden). The assimilation limit for starch is unobtainable—that is to say, starch may be taken in any amount by a healthy individual without resulting in an excretion of carbohydrates in the urine.

Evidently, in this instance, digestion and absorption consume so much time that a sudden flooding of the blood with carbohydrates cannot take place. This is a fact of considerable importance, for it signifies that those who excrete sugar after the ingestion of starch have a morbidly-depressed assimilation limit, and the existence of diabetes mellitus is to be strongly suspected.

It may be most appropriate to make reference here to the fact that in those diseases where the power of warehousing carbohydrates is known to be sometimes diminished, such as in exophthalmic goitre, possibly in certain liver diseases, and occasionally in gout, it is glucose which is used in order to determine the "assimilation limit." If, for instance, a patient be given 100 grams of glucose on an empty stomach or after a very light meal, and he be found to excrete sugar in the urine, it will mean that his power of warehousing carbohydrates is decidedly reduced, as he should be able to dispose of from 200 to 250 grams of glucose without a glycosuria manifesting itself.

I may have erred in devoting so much time to these physiological considerations, but I feel that we shall arrive at a better understanding of what is to follow for having the fate of the carbohydrates under normal conditions of metabolism reviewed.

THE ETIOLOGY OF DIABETES MELLITUS.

I purpose now to proceed to the consideration of a few of the more important etiological factors in the production of diabetes mellitus:

I. *Diabetes Resulting from Organic Diseases of the Nervous System.*—In a consideration of this causative factor one must necessarily refer to the experimental work of Claude Bernard in animals. In 1849 this observer published the results of his celebrated medullary-puncture experiments. He found that injury of a point in the floor of the fourth ventricle near the tip of the calamus scriptorius, and between the centers of the pneumogastric and auditory nerves, produces a hyperglycemia with polyuria and glycosuria of several hours' duration. I may say here that medullary puncture a little higher in a frontal direction causes albuminuria alone, while another somewhat lower causes simply polyuria. It was found that no glycosuria followed if the liver had been previously deprived of most of its glycogen by enforced fasting for a considerable time, by chasing the animal about, inducing pyrexia, by ligation of the ductus choledochus, and by other means. Claude Bernard and others have considered these phenomena symptoms of irritation, not of paralysis. As irritation of the chorda tympani causes increased functional activity and hyperemia of the submaxillary gland through the influence of sympathetic fibers which preside over the vessels, and lead to their distention, so is a vasomotor center in the brain irritated by Bernard's puncture. In the case of the medullary puncture the stimulation is transferred through the upper part of the cord and forward through the splanchnic nerve to the vessels of the abdominal organs in which hyperemia plainly manifests itself. By the increased flow of blood to the liver its glycogen is atacked more actively than usual by the diastatic ferment in the blood, and the production of sugar is increased, according to Claude Bernard. After the medullary puncture it is found that the liver is practically free from glycogen, having given it up to the system in the form of glucose. According to von Noorden, as a result of an irritated spot in the central nervous system, a centrifugal stimulus is transmitted to the liver, and this stimulus causes the organ to discharge its store of glycogen. He says it is believed by many that the primary stimulus is transmitted through the vasomotor nerves, but that others prefer to regard it as a direct action of the nervous irritation upon the hepatic cells. In organic diseases of the brain where glycosuria or permanent diabetes occurs it is probable that there is some centrifugal impulse sent out from the brain to the liver, causing the latter to give up its glycogen in the form of glucose, thus bringing about a hyperglycemia, with the consequent production of either a temporary or permanent glycosuria. In addition to lesions of the medulla, it has been found that injuries of the optic lobes and the central and posterior parts of the pedunculi cerebelli may cause glycosuria. So also after traumatism to the brain and after apoplexy a glycosuria may occur.

II. *Diabetes Due to Diseases of the Pancreas.*—As the work of the last two or three years has shown that a great many more cases of diabetes are actually due to diseases of the pancreas than was formerly believed, I propose devoting considerable space to a consideration of this part of the subject. I shall first refer to the work that has been done in connection with experimental pancreatic diabetes. In 1889, von Mering and Minkowski published their findings after the complete removal of the pancreas of various animals, particularly dogs. They found in experimenting upon the latter animals that complete extirpation was followed within 24 hours by a severe form of diabetes, which led to the death of the animal in a few weeks. The disease thus produced resembled in every respect grave diabetes in man, because, besides the glycosuria, there existed polyphagia, polydipsia, polyuria, emaciation, loss of strength, excretion of large quantities of acetone, diacetic acid, *b*-oxybutyric acid and ammonia, the development of coma, and, finally, death. Many other experimenters had attempted to produce glycosuria by extirpation of the pancreas, division of the nerves supplying it, and tying of the pancreatic duct, but with little or no success. Minkowski attributed the negative results in cases where attempts had been made to remove the pancreas to the fact that small portions of the gland were left behind, owing to the difficulty in successfully performing the operation. The work of von Mering and Minkowski has now been amply confirmed by subsequent investigators. I summarize from von Noorden's writings the chief points concerning experimental pancreatic diabetes up to date: 1. Diabetes has up to the present been artificially produced by extirpation of the pancreas in the following animals:

dogs, cats, pigs, carnivorous birds, frogs, and turtles. The following points refer especially to the experiments on dogs: 2. Diabetes occurs only in dogs when the pancreas has been totally removed, but then regularly. The same results have been shown by running melted paraffin into the pancreatic duct, thus causing complete atrophy of the gland substance. 3. When the pancreas is partially extirpated, and the remaining portion, with its vessels attached, sutured to the abdominal wall, diabetes fails to appear. But if this engrafted portion be removed at a subsequent operation, diabetes ensues. This modification of the experiment shows that the disease is not due to accidental injuries to the sympathetic nerves during the operation. 4. When about one-tenth part of the pancreas is left in a functionating condition a mild form of diabetes results. The glycosuria is slight, and occurs only after the ingestion of carbohydrates. If the remaining tenth of the gland be subsequently extirpated, then diabetes in a severe form ensues. When more than one-tenth of the gland is left behind, with power to perform its functions, no diabetes usually follows. 5. The relation which exists between the pancreas and excretion of sugar from the organism does not depend upon the action of the pancreatic juice, for diabetes does not occur in cases of simple shutting off of the latter from the intestine, nor when the excretion escapes through a cutaneous fistula. 6. The influence of the pancreas upon the excretion of sugar appears to be, at least in dogs, a specific one—that is, no organ other than the pancreas possesses it.

From these results two hypotheses have been formulated—1. Some substance which has an injurious influence upon the conversion of sugar collects in the organization after extirpation of the pancreas; 2. After this operation there is some substance wanting, or function abolished, which, under normal conditions, serves to facilitate the metabolism of carbohydrates.

The important fact has been established, namely, that the deposition of glycogen in the liver and muscles does not normally take place after extirpation of the pancreas. The animals may be given large quantities of starchy materials without more than mere traces of glycogen being found in these organs. Lépine of Lyons professes to have discovered that the pancreas produces an internal ferment, which enters the circulation and causes a breaking up of the grape-sugar molecule within the blood. This substance he termed a "glycolitic ferment." After the pancreas is extirpated this ferment is not present, and consequently the combustion of the sugar in the tissues does not occur; a hyperglycemia ensues, and glycosuria results. Recent work on the pathology of the pancreas has afforded evidence strongly in support of this view.

As early as 1869 Langerhans pointed out that, in addition to the ordinary acini of the pancreatic gland, there were peculiar isolated groups of cells, differing in structure from the ordinary gland cells, situated in the center of the lobules, and to which since his description the name of "islands of Langerhans" has been applied. According to Opie, who has made a special study of the pancreas and of these islands in particular, they are composed of columns of cells having no communication with the ducts of the gland, but in intimate relation with a rich capillary network. These cell groups imbedded among the acini are usually round, and in tissue treated two or three days with Müller's fluid they appear, under low magnification, as conspicuous points of a bright yellow color. With high magnification they are found to be composed of small, irregular, polygonal cells, having a round nucleus and homogenous refractive protoplasm.

In a study of cases of chronic pancreatitis Opie recognizes two different types—an interlobular and an interacinar. In the former the development of fibrous tissue is most conspicuous between the lobules, while that within the lobules and between the acini is less markedly increased. In the latter, on the other hand, the interlobular connective tissue is not specially increased, whereas the connective tissue between the individual acini of the lobules is markedly augmented. In the interlobular form the lobulation of the gland, which is normally obscure, becomes conspicuous, and wide points of sclerotic tissue may separate groups of lobules. With the interacinar type of chronic inflammation the lobulation of the gland is not accentuated, and the new fibrous tissue primarily within the lobule has a different character, being a network of fibrous strands, which vary markedly in thickness and contain in their meshes the gland acini.

In cases of chronic interstitial pancreatitis of the interlobular type the islands of Langerhans, which are situated in the center of the lobules, are not usually involved, only becoming affected when the lesion has reached a very advanced stage. With the interacinar variety, however, the new-formed tissue between the acini invades the islands. The latter are almost constantly surrounded by fibrous tissue, forming a capsule, separating them from neighboring acini. About the capillaries within the islands there is a proliferation of interstitial tissue forming coarse strands between the columns of cells. When the process is advanced the cells are diminished in size. All nuclei are small and stain deeply. In fact, in some of the most marked cases the cellular structure of the islands practically entirely disappears.

In a consideration of lesions of the pancreas great interest centers in their relationship to diabetes mellitus. Opie in his original communication on chronic interstitial pancreatitis and the islands of Langerhans reported 11 cases of the chronic interlobular type, in only one of which was diabetes mellitus present. Of the second type, the interacinar pancreatitis, he reported three cases, two of which had diabetes mellitus. He also reported in his original communication a case of diabetes mellitus in a young girl, 17 years of age, who for two years before her death had suffered from diabetes. The clinical examination of this patient revealed no definite etiological factors. Death eventually ensued and an autopsy was obtained. The pancreas in the gross showed no evidences of disease. On microscopic examination, however, it was found that the islands of Langerhans were completely destroyed throughout the whole gland, with little or no involvement of the ordinary secreting cells of the pancreas. In the stained sections the islands stood out conspicuously as red areas of hyaline degeneration, a few nuclei being still seen, without any of the original island cells being visible. Since his original communication Opie has observed a number of cases of interstitial pancreatitis, some of which were associated with diabetes, and in all the cases in which diabetes occurred the islands of Langerhans were most seriously affected, and in those instances where diabetes was not present these islands were fairly well preserved. The form of interstitial pancreatitis in which the diabetes most frequently occurred was the interacinar form. This is what one would expect, because the islands, being situated in the centers of the pancreatic lobules, are much more likely to become diseased where the connective tissue passes between the individual acini of the lobules. Further, since his original publication we have had at least three cases of diabetes mellitus in the medical wards of the Johns Hopkins Hospital in which at autopsy no causes for the diabetic condition could be ascertained on gross examination. The pancreas also in the gross showed no evidences of abnormality. On microscopic examination, however, it was found in these cases that the islands of Langerhans were almost completely destroyed by the peculiar hyaline degeneration already described, whereas the rest of the gland showed no special histological changes. In view of the almost constant association of diabetes with disease of the islands of Langerhans, it was quite natural that Opie should conclude that there was a very intimate relationship between the functions of these islands and carbohydrate metabolism. Laguesse and Schäfer had suggested previously that the islands furnish an internal secretion in the same way that the thyroid and adrenal glands do. Owing to the small size of the islands, and the almost utter impossibility of isolating them from the rest of the gland substance, it has been practically impossible to produce experimental evidence favoring this view, although comparatively recently Ssobolew claims to have done so. Being ductless glands, and surrounded by a rich capillary network, it is extremely probable that these islands of Langerhans secrete some ferment—we may call it a "glycolitic ferment," after Lépine—which enters the circulating blood, and which is necessary for the proper combustion and breaking up of the carbohydrates in the system. Opie's observations have been confirmed now by many other observers, and his contribution to the etiology and pathology of diabetes mellitus is the most important that has appeared for many years. It almost perfectly clears up the explanation for the occurrence of diabetes mellitus in animals in which the pancreatic gland has been completely extirpated. You will recall that when one-tenth of the gland, with the vessels attached, is left behind and imbedded in the subcutaneous tissue of dogs diabetes mellitus does not occur, but that when this portion of the gland is eventually removed the disease in its severe form manifests itself. The tail of the pancreas, particularly in human beings, is rich in islands of Langerhans. Also in dogs, when the tail of the organ is left behind, these islands continue to secrete their specific ferment and pour it into the circulating blood, thus rendering the system capable of properly disposing of the carbohydrates. When the portion of the gland is eventually removed this ferment is not produced, sugar accumulates in the blood, and glycosuria develops.

In the past the etiology of many cases of diabetes mellitus has never been cleared up even by careful autopsy. In many of the cases no gross evidences of pancreatic disease in the form of atrophy or tumor of the gland were manifest, and it was naturally concluded that these cases could not be considered instances of pancreatic diabetes. Opie's work shows, however, that such conclusions must not be drawn, because the gland may, macroscopically, appear perfectly healthy, whereas on microscopic examination the islands of Langerhans may be completely degenerated. What I wish to emphasize, then, is that in all autopsies on diabetes mellitus cases it is not sufficient to say that the affection is not due to pancreatic disease when the gland appears normal in the gross, but that it is necessary to make a careful microscopic examination of the organ. I feel that in this way a vast majority of the cases of diabetes mellitus with apparently negative features at autopsy will be found to be actually due to pancreatic disease in the form of degeneration of the islands of Langerhans.

There are undoubtedly, however, certain cases of diabetes mellitus in which organic lesions of the brain and pancreatic disease cannot be made out at autopsy. In these cases some other causes must be sought. In November, 1903, Cohnheim,[1] son of the famous pathologist, published what will probably prove to be one of the most important contributions to the physiology of carbohydrate metabolism that have appeared to date. This research appears to have cleared up many of the obscure points in connection with the normal warehousing of the carbohydrates. Pawlow had shown that one of the pancreatic enzymes, trypsinogen, was in itself inactive on proteids, and that it only became active on reaching the intestinal tract and on coming in contact with another ferment, *enterokinase*, secreted by the intestinal mucosa. After the interaction of these two ferments the trypsinogen was converted into trypsin, and proteid digestion then became active. It was as a result of the consideration of this most interesting physiological process that Cohnheim was led to his very important discovery. He appreciated the fact that there were evidently glycolitic ferments produced somewhere in the body. He was familiar with the experimental work of von Mering and Minkowski, and fully appreciated the strong probability that the pancreas was intimately associated with carbohydrate metabolism. He suspected possibly, however, that the secretion of some other tissue in the body was probably necessary for the successful action of any glycolitic ferment produced by the pancreatic gland. He went about his research in an orderly way. He first made an extract of the pancreas by expressing the juice of the cells by a specially-constructed, powerful press, and added the expressed juice to solutions of glocose, and found there was no breaking up of the sugar into carbonic acid and alcohol. He next made a compressed extract of the muscles and added it to solutions of glucose, with similar negative results. He next added mixtures of the juices of the pancreas and muscles obtained in the way described to solutions of glucose, and found there was then a rapid and complete destruction of the sugar solution. This appears to be a most important discovery, and has a very direct bearing on what we have just considered in connection with the pathological changes in the pancreas in cases of diabetes.

Putting together all these facts now acquired, it would seem that in the islands of Langerhans there is formed a substance which is like a ferment in constitution, as it is destroyed by heat. This substance, passing to the muscles through the blood-stream, meets in the muscle cell another ferment or proferment, and between them a reaction occurs, resulting in the formation of a ferment that has the power of rapidly destroying sugar. It would appear, then, in pancreatic diabetes that we have an absence or deficiency of the specific secretion of the islands of Langerhans that is necessary to make the glycolitic substance of the muscles active. To be sure, this does not exclude the possibility of a similar combined effect with substances in any other tissues of the body where sugar is burned. The unknown ferment that results from the action of pancreatic and muscular zymogens seems to be specific for dextrose, for in diabetics other forms of oxidations seem to be but little, if any, impeded.

One of the most remarkable things about Cohnheim's discovery is its simplicity, the usual history in connection with important discoveries. For years physiological chemists have been endeavoring to put the sugar destruction on the pancreas or on the muscles, knowing them to be concerned, but without result. It did not seem to occur to anyone to suspect that the combined action of the two tissues was necessary.

Cohnheim's experiments afford a possible explanation why in certain cases of diabetes mellitus we do not find lesions of the islands of Langerhans. In these cases it may prove that the muscles are at fault, and that the ferment, which is supposed to be supplied by them, is not produced, owing to some functional disturbance of the muscular tissues.

I should like to say a few words here in regard to a certain group of cases of diabetes mellitus in which there is a marked bronzing of the skin and which the French have described as cases of "bronzed diabetes" or *"diabète bronzé."* It was found in these cases that there was usually a form of cirrhosis of the liver of a hypertrophic type, which Hannot and Schachmann called *cirrhose pigmentaire diabètique.* They, with many others, believed that the pigmentary cirrhosis, as well as certain sclerotic changes in the pancreas, were secondary to the diabetic condition. In recent years, however, opinion in regard to the etiology of these cases has materially changed. In 1889 von Recklinghausen[2] described a curious affection characterized in some instances by general pigmentation of the organs and skin and in other cases of localized pigmentation, and to which he gave the name "hemochromatosis." To be brief, it was found that these cases of hemochromatosis were associated with an enlarged pigmented liver and often an interstitial pancreatitis. Von Recklinghausen found that in these cases the tissues contained two different forms of pigment. The first was an iron-containing pigment, "hemosiderin," which was most abundant in the gland cells of the liver and pancreas, also in the lymphatic glands, and to a slight extent in the cells of the sweat glands of the skin. This iron-containing pigment was of a rather deep brownish-yellow color, the granules being rather coarse, and it was supposed to be derived from the hemoglobin of the blood. The other pigment was a non-iron-containing pigment, to which von Recklinghausen gave the name "hemofuchsin." It was deposited chiefly in the unstriped muscle fibers of the blood-vessels of the liver and pancreas, in the muscle cells of the intestinal wall, in the muscle cells of the heart, and also in the deeper cells of the Malpighian layer of the skin. The source of this pigment was not definitely ascertained, but it was believed to be derived from the hemoglobin of the blood also. Von Recklinghausen, however, did not draw any definite association between this new morbid entity and diabetes. It had been shown by a number of observers subsequent to von Recklinghausen's report that a certain percentage of these cases had sugar in the urine. To be brief, the following are the views now entertained in regard to this comparatively rare but most remarkable affection: It is held that the disease is due to some primary blood change by which the red cells are made more vulnerable, permitting them to disintegrate more readily and to give up their hemoglobin. This blood pigment is deposited mainly in the gland cells of the liver and pancreas, as well as elsewhere in the body, leading in a certain percentage of cases to definite bronzing of the skin. As a result of the local deposition of the pigment in the liver and pancreas a chronic interstitial inflammation of these organs is produced, which leads in the case of the liver to a hypertrophic pigmentary cirrhosis, and in the case of the pancreas to an interstitial pancreatitis of a pigmentary type. In the early stages or early years of this affection sugar does not appear in the urine, and it is only when the changes in the pancreas become so advanced that the islands of Langerhans are largely or completely destroyed that glycosuria and diabetes develop. In 1889 Anschütz[3] collected all the cases of hemochromatosis that had been reported in the literature, 24 in number, and it was found that they were entirely in males, and that the disease manifested itself between the thirtieth and sixtieth years of age, and most frequently in the fourth and fifth decades. I may say here that we have had only two cases of hemochromatosis in the Johns Hopkins Hospital. One had not reached the diabetic stage; the second is now in the hospital and has a severe grade of diabetes. Opie[4] reported the first case of the disease in this country. His case had also not reached the diabetic stage. Dr. Osler[5] reported the first case that we had in the hospital in association with a second instance which came under his observation in private practice.

(*Cotinued Next Month.*)

ANTITOXIN FOR HAY FEVER AND ROSE COLD

By Leonard K. Hirshberg, M.D.,

Baltimore.

AUTUMNAL catarrh, rose cold, hay fever, spring asthma, and similar complaints all seem to be due to the toxin found in the pollen grains of the grasses. The autumnal catarrh of the United States is not excited by the pollen of grasses, but by the pollen of late-flowering plants, such as ambrosia and solidago or golden-rod. Patients suffer when the plants are in flower. There is, however, a very close relationship between the two, as has been proved by Dr. Dunbar. The antitoxin of solidago (golden-rod) will neutralize the toxin of the graminaceae.

The striking symptoms of both rose cold and hay fever are catarrhal. There is intolerable itching of the eyelids, swelling of the membranes, lachrymation, watery discharge from the nose, and paroxysms of sneezing. Cough, laryngitis, and choking asthmatic attacks are common. Two of my patients have had their attacks recur almost at the same date in August every year. Every treatment hitherto tried has only alleviated the symptoms for a few hours, while a sojourn at the seashore or in a different climate has always immediately relieved them. Every physician has the same experience with hay-fever patients; therefore we are waiting with open arms and unprejudiced minds for some specific to cure the affection.

About a month ago I tried to procure some of Dunbar's antitoxin, but found there was none in this country at that time. I then wrote to Dr. Dunbar in Hamburg, and received this cordial letter in reply:

> *Sehr geehrter Herr Doktor:*
>
> Unfortunately we are no longer in possession of any preparations, and have given up for the present any scientific work on the subject. The firm now manufacturing the antitoxin call it "Pollantin," and enclosed you will find some of their reprints. It can now be purchased through Fritzsche Bros., New York, 37 Barclay street, agents for Schimmel & Co., Leipsic, who are the manufacturers. In the hope of being of some service to you, I have requested them to send you a package of the toxin and antitoxin.
>
> Hochachtungsvoll,
> DR. DUNBAR.
>
> May 21, 1904.
> Herrn Dr. Leonard K. Hirshberg, Hochwohlgeboren,
> 1801 Madison avenue, Baltimore.

This letter reached me the same day that two packages of Pollantin arrived from Fritzsche Bros., New York. One package contained the serum (liquid antitoxin), the other a powder (dry antitoxin), with a brush and a pipette. The prices were labeled upon each as $2.50 a package.

Pollantin, both in the liquid and powdered form, is for external use only, never for subcutaneous inoculation. The powdered antitoxin seems to be of greater efficiency, and is certainly more convenient than the liquid, but the patients prefer the liquid form, especially for the conjunctival symptoms. Twenty-five per cent. phenol is added to the liquid as a preservative, but it decomposes anyhow if it becomes contaminated with nasal secretions. If any turbidity or odor is noticeable, it signifies decomposition.

The dose of Pollantin, like diphtheria antitoxin, is harmless in any quantity, and has no bad effects on associated conditions in hay-fever patients. It does not leave a permanent immunity, and, like all other kinds of antiserums, requires additional application in each attack. By its use patients may free themselves from the attack for days, even when in the open air. It is more especially a prophylactic, and to the preventive treatment of the disease the patients must give their attention. By taking proper precautions, and the frequent, systematic use of the powder, the attacks can be warded off from the very beginning.

DIRECTIONS FOR USING POWDERED POLLANTIN.

1. Fill about one-fourth of the little scoop inserted into the cork of the serum-containing tube with the powdered Pollantin. Holding this under one nostril, sniff the powder up, keeping the other nostril closed. The powder will be better distributed over the

interior of the nose if, while sniffing, the outside of the nostril treated be lightly tapped.

2. Those patients who wish to use powdered Pollantin for the treatment of the eyes should dip the accompanying camel-hair brush into the powder, and brush it along the inner surface of the lower eyelids previously drawn down by the finger.

3. Hay-fever patients ought to sleep with closed windows during the hay-fever season.

4. Pollantin should be used, both for eyes and nose, regularly every morning, a few minutes before rising. Should it cause sneezing or reddening of the mucous membrane of the eye, the preparation should be again used after the lapse of one or two minutes, and if the sneezing or the reddening of the eye does not then disappear, the instillation should be repeated a third, or even a fourth time. By this morning treatment the patient will generally find himself insensitive to the hay-fever poison for several hours—often, indeed, for the whole day.

5. Those patients who are unable to keep themselves completely free from attacks—even when they begin serum treatment before the commencement of the hay-fever season, always sleep with windows closed, and regularly carry out the above-described morning treatment—are recommended to carry Pollantin always about with them. They should use the serum during the course of the day whenever there is the slightest sign of irritation, and not wait until a sharp nasal attack sets in. When the nose becomes so swollen and blocked the antitoxin cannot be applied efficiently nor properly absorbed from the altered mucous membrane.

6. If the use of Pollantin at the correct time as described has been neglected, the serum may still be used with benefit in the early stages of an attack by stopping the burning in the eyes, the excessive flow of tears, and the sneezing. Should, however, the hay-fever poison have entered the body in such amount that the eyes have become strongly inflamed and the nose swollen and blocked with secretion, or that the asthma have appeared, then the patients should retire to rooms with doors and windows closed, and remain there until all these symptoms have disappeared. By using instillations of Pollantin, at first every 10 minutes, and later at longer intervals, this process can be accelerated. When the patient's condition is once more restored to the normal, he should endeavor to prevent any further attacks by the careful use of the serum as above described.

DIRECTIONS FOR USING LIQUID POLLANTIN.

1. Pour about one-third of the contents of the serum phial into the accompanying empty glass phial provided with a dropping pipette. The phial with dropper is sent out in a small wooden

case, and should be carried in the pocket as nearly as possible in the upright position.

2. The method to employ in using liquid Pollantin is as follows:

(a) *For the Eye.*—Bring, by means of the pipette, one drop to the outer angle of the eye, and, drawing down the lower lid with the finger, allow the drop to come into contact with the mucous membrane. A pleasantly-cool sensation felt in the eye shows that the instillation has been properly carried out.

(b) *For the Nose.*—With the head bent somewhat backwards, insert the point of the pipette about half an inch into each nostril and express one or two drops of Pollantin into each. Care must be taken to keep the pipette squeezed so long as it is within the nose, otherwise the Pollantin will be drawn back into the pipette again. After Pollantin has been introduced into one nostril, the other must be kept closed while the serum is sniffed up from the one treated, tapping the while on the outside of that nostril with the finger.

3. The pipette, together with its india-rubber head, should be thoroughly cleaned at least once daily, and kept for one minute in boiling water.

4. Hay-fever patients ought to sleep with closed windows during the hay-fever season.

5. Pollantin should be used, both for eyes and nose, regularly every morning, a few minutes before rising. Should it cause sneezing or reddening of the mucous membrane of the eye, the preparation should be again used after the lapse of one or two minutes, and if the sneezing or the reddening of the eye does not then disappear the instillation should be repeated a third or fourth time. By this morning treatment the patient will generally find himself insensitive to the hay-fever poison for several hours or the whole day.

6. Those patients who are unable to keep themselves free from attacks should use the serum whenever there is the *slightest sign* of irritation, and not wait until a sharp nasal attack sets in.

Liefman has shown that in the hay-fever period the number of pollen grains contained in the air, especially in cities, is more than sufficient to excite hay-fever attacks. Blackley has also proved this.

In the literature so far published about 300 patients suffering with hay fever have been treated with Dr. Dunbar's antitoxin. One hundred and eighty-two of these obtained a perfect result. All the symptoms were absent in this 61 per cent. of the cases. Almost all experienced some benefit, about 40 only having no relief whatever. The writers were not able to ascertain whether this 12 per cent. persisted conscientiously in treating themselves.

The horses used in the preparation of the serum are subjected to the same rigid tests and inspection used in the manufacture of diphtheria antitoxin. After the horse has been inoculated and made highly immune to the pollen, a definite quantity of blood is withdrawn from the jugular vein under major aseptic precautions. This is done six or eight days after the horses have recovered and regained the weight present before the injection of the first dose of the toxin. The serum is examined bacteriologically, and, if sterile, .25 per cent. of carbolic acid is added as a preservative. It is then ready for use.

The reason this antitoxin is not serviceable for hypodermic use is because in this manner the immunity produced is too temporary, and very unpleasant local complications arise, such as itching, urticaria, erythema, and abscesses.

The importance to hay-fever patients of sleeping with closed doors and windows cannot be overestimated. The same is true of the use of the serum in the morning before rising, before the mucous membranes come in contact with pollen dust.

The powdered antitoxin is obtained by drying the serum in a vacuum at a low temparature. It is strained through a hair sieve after sterile lactrose has been added. This is all accomplished aseptically. No preservative whatever is added. After six months it is yet sterile and preserves the original antitoxic value.

According to the reports, most of the patients treated only partially follow the prophylactic measures. In spite of this fact, some observers (McCoy and Somers) report over 70 per cent. of positive results and 19 per cent. fairly positive.

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WHEN heaven is about to confer a great office on any man it first exercises his mind with suffering and his sinews and bones with toil; it exposes his body to hunger and subjects him to bodily privation.—*Mencius.*

Current Literature

REVIEW IN MEDICINE.

Under the Supervision of Thomas R. Brown, M.D., Baltimore.

THE PHYSICAL PROPERTIES AND MEDICAL USES OF RADIUM SALTS.

Williams (*Medical News,* Vol. LXXXIV, No. 6), who is one of the great authorities in the country on the use of the *x*-rays and other forms of radiant energy, reports 42 cases treated by pure radium bromide, also discussing at some length the physical properties and medical uses of the radium salts.

After going briefly into the history of the discovery of radium, he speaks of its five properties which especially deserve notice. These are (1) it maintains a temperature above its surroundings under thermal insulation (a temperature of 1.5° C. has been observed); (2) it is luminiscent; (3) it is a spontaneous source of electricity; (4) it gives out three kinds of rays, named by Rutherford alpha, beta, and gamma, and (5) it produces in surrounding objects "induced" or "excited" or "imparted" radioactivity.

Williams next discusses the three varieties of rays as regards their various physical and electrical properties, drawing largely, of course, upon Mme. Curie's work in this connection.

He then considers radium salts from a medical point of view. As regards the use of radium rays for diagnosis or prognosis, they cannot replace the *x*-rays for these purposes on account of their inability to show sufficient differentiation between the tissues. On the other hand, the emanations from radium are of real value as a therapeutic agent.

As to the precautions to be followed, radium should always be kept in a metal box or capsule with a thin mica front or other suitable covering, so that the radiations may be cut off in all directions except that in which the practitioner desires the rays to proceed. To this capsule Williams has applied a long flexible handle.

As to the method of using the radiations from radium, the capsule is placed on or near or farther away from the part to be treated, according to whether a strong or weak action is desired, remembering that experience alone can tell one of the distances and length of time of exposure in each individual case. As a rule, if pure radium bromide be used, and the capsule containing it be placed directly on the spot to be treated, the exposure is from one-half to two or three minutes, the exposures being made two or three times a week.

Williams has treated 42 cases by this method, nine of which were diseases of the skin (one case of acne, two cases of eczema, two of psoriasis, and four of lupus vulgaris), while of the remaining 33 cases, one was a small keloid, five were cases of rodent ulcer, 23 of epidermoid carcinoma, and four of breast carcinoma.

The results in the skin cases were very satisfactory, while the results in the malignant cases were distinctly promising.

Williams, after making a careful comparison between the radium rays and the x-rays, concludes that there is much similarity between the action of the radiations from radium and the x-rays; that if the results obtained by radium prove permanent, this new therapeutic agent will be largely used instead of the x-rays, but that the two will supplement each other. As to the comparative value of the two:

1. Certain diseases promise to yield more readily to treatment by radium and others to the x-rays.
2. A disease that has attacked different parts of the body of a given patient may be better treated in certain regions by radium and in others by the x-rays.
3. It is quite possible that in some cases the two remedies used together on the same area and at the same sitting may accomplish better results than either alone.

* * *

THE x-RAY TREATMENT OF SARCOMA.

Coley (*Medical News,* Vol. LXXXIV, No. 6) reports the results of the x-ray treatment of sarcoma and carcinoma, especially as regards the late results of the treatment in the case of carcinoma.

Since February, 1902, Coley has had under observation 103 cases of malignant tumors treated with the x-rays (30 recurrent carcinomas of the breast, 42 sarcomas in various localities, 28 cancers of the head, face and neck, and three miscellaneous).

Coley then briefly recites the after-history of seven of the apparently successful cases, in all of which, after a greater or less period of time, recurrences occurred. From these cases and a consideration of the cases in the literature Coley concludes that most physicians have been far too optimistic in regard to the value of x-ray treatment in malignant disease.

Coley, after calling attention to the absolutely unwarranted claims made by certain investigators—some claiming that 50 per cent. of the cases so treated are cured—again emphasizes his convictions:

1. The use of x-ray in cancer should be limited to recurrent and inoperable cases, with the sole exception of small superficial epithelioma of the face. Even here Coley believes the results of excision will prove to be better and more lasting save in the proximity of the eyelids and nostrils.
2. It is most misleading to report as cures cases in which malignant tumors have merely disappeared under the influence of the x-ray, since return is the rule rather than the exception.
3. At the present moment there is no evidence to prove that any permanent cures have been obtained, save possibly in the case of rodent ulcer.

* * *

THE RADIANT-LIGHT BATH IN THE TREATMENT OF NEUROSES.

Crothers, superintendent of the Walnut Lodge Hospital at

Hartford, discusses (*New York and Philadelphia Medical Journal,* July 23, 1904) the radiant-light bath in the treatment of neuroses of various kinds. His conclusions are based on the results obtained by him during the past year, during which time more than 1000 of such baths were given under his direction.

"The apparatus is simply a small room covered with incandescent lights, in which the reflecting power is intensified as far as possible by a lining of tin. All the baths given were followed by showers, douches, and rubbing." As compared to the hot-air bath, in regard to the effect produced on the temperature, pulse, and tonicity of the arteries, the radiant-light bath showed great superiority. The pulse usually decreased in frequency of rate in the radiant-light bath, while the tension of the arteries invariably fell.

In nearly all cases a feeling of exhilaration followed the use of the bath.

"The physiologic action of the radiant-light bath depends on the heat and chemical rays coming in contact with substances that are resistant to their passage, and thus become transferred into heat and chemical energy. The skin is a poor conductor of heat, but transmits light and radiant energy easily."

Crothers then reports in detail five cases of neuroses treated by this method, in all of which very favorable results were obtained. In four of these five cases there was a strong alcoholic history.

According to the author, the toxemias and the palsies were especially benefited by the radiant-light baths, especially if followed by cold and hot water applications. Crothers' conclusions are as follows:

1. The radiant light penetrating to the deeper tissues of the body is turned into heat or transformed into nerve energy more positively than that of heat from hot air.

2. The clinical effects of the bath prove its power as an eliminating agent and a corrector of nutrient, neurotic, and capillary disturbances.

3. In neurotic diseases its action in conjunction with other measures is far superior to any of these means when used alone.

4. The evidence so far points unmistakably to the possibilities that, when used in connection with other electro-therapeutic measures, it may come into general use and constitute a real advance in the progress of neurological therapeutics.

These, of course, are the words of an enthusiast, but his results are extremly interesting, and coupled with the results obtained in various neuroses and neuralgias by the *x*-rays, the Finsen rays, and the rays from radium, they open up an extremely interesting therapeutic vista.

* * *

THE TREATMENT OF BRONCHO-PNEUMONIA IN CHILDREN.

Northrup (*Medical News,* Vol. LXXXIV, No. 18), from his enormous experience in pediatrics in connection with the New

York University and Bellevue Hospital Medical College, thus summarizes "how to cure a baby with broncho-pneumonia:"

1. Castor oil to clear the field of operation. It is the first aid to the injured.

2. Fresh air, cool and flowing. It reddens the blood, stimulates emia. Regulate the temperature of air of the room inversely to that of the child. The patient's feet must always be warm and the head cool.

3. Water, plenty, inside and outside; temperature of the water as indicated by the child's temperature.

4. Quiet and rest; tranquilizing influences about patient; undisturbed sleep.

5. Correct feeding to avoid fermentation and gas in abdomen. If there is need, high, hot salines.

6. Antipyretics; water; no coal-tar products.

7. Heart stimulants; fresh air; hot foot-baths; relieving tympanites and crowding. Hot foot-baths and hot salines can be given in a cold room. Both can be given under the bedclothes.

Drugs.—Whiskey and strychnine.

REVIEW IN PATHOLOGY AND BACTERIOLOGY.

Under the Supervision of José L. Hirsh, M.D., Baltimore.

IMPROVED TECHNIQUE OF AGGLUTINATION TEST IN TYPHOID FEVER—THE USE OF FORMALIZED CULTURES. E. H. Ruediger. *Journal of Infectious Diseases,* May, 1904.

In the usual methods of applying the agglutination test in typhoid fever the one drawback is the necessity of using living cultures of the organism, which are not always obtainable except at institutions where the work is done on a large scale. Proscher has shown, however, that a 24-hour bouillon culture of B. typhosus which has been killed by formalin gives the same specific reaction as the living culture when mixed with blood or blood serum from a typhoid patient. It is this method which is discussed in this paper.

The steps of the method most suitable for daily clinical use are as follows: Inoculate a large quantity of plain bouillon (100 to 1000 c. c.) with B. typhosus, incubate at 36° C. for 24 hours, and add 1 c. c. formalin for every 100 c. c. of bouillon. The culture is now ready for future use, except that it must be shaken before it is used, because the dead organisms gradually settle to the bottom. A culture prepared in this manner is always ready for use, and can be kept at room temperature for months.

Collect four drops of blood in a small test tube containing 2 c. c. of a 1 to 500 solution of formalin in distilled water. Laking is soon complete, making a clear solution of approximately 1 to 10.

To 1 c. c. of the blood solution add 4 c. c. of the dead culture, making a dilution of 1 to 50, and set the tube aside. Make a control tube by mixing 1 c. c. of a 1 to 10 solution of normal blood or 1 c. c. of distilled water with 4 c. c. of the culture, and set it aside.

If agglutination takes place, the dead organisms collect in clumps and within an hour or two are seen as a flocculent precipitate settling towards the bottom, leaving the bouillon clear at the end of 12 to 24 hours.

Dried blood may be used instead of fresh blood. On a glass slide collect four drops of blood, spread it and allow it to dry. When wanted for use, dissolve it in 2 c. c. of distilled water and proceed as above directed.

In this manner the author studied 34 cases, using fresh blood serum, of which 30 gave positive reactions. In comparing the results obtained with dead cultures with those obtained from living cultures it was found that the two differ very slightly. The reaction becomes evident somewhat sooner with the dead than with the living cultures.

The author has been able to get the reaction with a culture dead for one year.

* * *

Studies in Pneumonia and Pneumococcus Infections. Edward C. Rosenow. *Journal of Infectious Diseases*, March, 1904.

In this work an attempt has been made to establish more accurately (1) the frequency and time of pneumococcus invasion of the blood in pneumonia and its relation to leucocytosis, and particularly to the crisis, as well as the diagnostic and prognostic value of blood cultures in this disease; (2) to study the agglutinating, bactericidal, and other actions of pneumonic and other blood serum. The writer goes into considerable detail as to the experiments carried on, gives the results in several tables, and draws the following conclusions from his work:

1. With improved technique, using for inoculation large quantities of blood, the pneumococcus can be recovered in practically all cases of croupous pneumonia, and in obscure cases of pneumococcus infection blood cultures may be a diagnostic method of positive value.

2. Pneumococcemia in pneumonia does not mean an especially unfavorable prognosis, and is to be regarded here, as in subcutaneous pneumococcic infections of the rabbit, not as an especially ominous or agonal process, but rather as an integral part of the infection.

3. There seems to be a diminution, either in the number or viability, or both, of the pneumococci in the blood at the time of crisis.

4. The number of leucocytes in pneumonia in man and in the pneumococcus infection in the rabbit is an index to the degree of resistance, and the leucocytes probably constitute an important factor in combating the infection. The clinical observation that

a high leucocytosis means a favorable prognosis, irrespective of the presence of pneumococci in the blood, is undoubtedly correct.

5. The hypoleucocytosis developing upon a previous hyperleucocytosis during the course of many fatal cases of lobar pneumonia (and in pneumococcus infection of the rabbit) cannot be looked upon as due to the entrance of the pneumococcus cells into the blood-stream, but probably rather as to the result of an exhaustion of the resisting powers.

6. The leucocytosis may be incited, at least in part, by soluble substances liberated by pneumococci.

7. It was not possible to establish any appreciable difference in the degree of virulence of the pneumococcus isolated early or late in the course of the disease, nor in the fatal or non-fatal cases.

8. Fresh normal pneumonic blood serum has no bactericidal influence upon the pneumococcus. Whatever other differences they may have, so far as this point goes the serum from pneumonia patients behaves exactly as does normal serum.

9. The interesting question whether lobar pneumonia is the primary result of a direct local infection of the lung, or a secondary localization of a primary blood invasion, is as yet hardly ripe for final discussion, but that the latter does occur, at least in some instances, is not altogether unlikely.

10. Agglutination of the pneumococcus by pneumonic serum is constant, but the conclusion drawn by certain investigators that the voluminous sediment and early clouding of certain immune sera in which the pneumococcus is cultivated are due to a rapid lysis of the cocci seems incorrect. It seems to concern a precipitate, the results of acids which appear when pneumococci are grown in pneumococcic serum.

11. The production of acids by pneumococci in pneumonic serum suggests that some of the toxic symptoms of pneumonia may be due to acid intoxication.

12. Since the viability and the virulence of the pneumococcus are preserved for a remarkable long period upon blood agar, we have in the medium an important aid to all investigations of this micro-organism. The constituent of the blood which has this remarkable effect is probably the hemoglobin. Blood-agar plates are valuable for differentiation of pneumococci and streptococci.

13. That the pneumococcus by its growth in rabbits produces a soluble hemolysin for the corpuscles of this animal is probably true. That this is either small in amount or unstable, or both, is likely.

* * *

Tonsilitis a Cause of Acute Nephritis. John Lovett Morse. *Archives of Pediatrics,* May, 1904.

While within the last few years a number of papers have appeared calling attention to the importance of acute tonsilitis in the etiology of acute endocarditis, but little attention has been paid to its importance in the etiology of acute nephritis. It would seem reasonable that tonsilitis, being due, as it is, to bacterial infection, and being often complicated by cervical adenitis, peritonsilar abscess or acute inflammaton of the middle ear, should lead to inflammation of the kidney, as do other acute diseases due to microorganisms. An additional reason why it might naturally be followed by inflammation of the kidney is that it is usually caused by the streptococci, the same organism usually found associated with scarlet fever.

Morse reports four cases of tonsilitis followed by acute nephritis. Two of the cases were in adults, both of whom had had scarlet fever in childhood with no sequelae. A few weeks after an attack of acute tonsilitis both showed signs of kidney involvement, which on physical and urinary examination showed typical cases of acute nephritis. The remaining two cases were in children, neither of whom had had scarlet fever. However, the author excludes the probability of the attacks of tonsilitis having been scarlatinal by the fact that there were no signs of an eruption, no desquamation, no cases in the neighborhood, and no one else in either family contracted scarlet fever.

It is evident that tonsilitis may be the cause of nephritis, and Morse insists that the heart and the urine should be as carefully watched in tonsilitis as in rheumatism or scarlet fever, and the examination should be kept up for a time during the convalescence.

* * *

EXPERIMENTAL STUDY OF THYROTOXIC SERUM. Milton M. Portis. *Journal of Infectious Diseases,* January, 1904.

It is well known that complete removal of the thyroid gland is followed by a typical group of symptoms terminating in death. More recently it has been shown by a number of observers that the acute symptoms simulating tetany and the rapid fatal termination follow the removal of the parathyroid bodies, even though the entire thyroid be left *in situ.* On the other hand, the removal of the thyroid, leaving the parathyroids untouched, is followed by chronic symptoms, such as myxedema, cretinism, and cachexia.

The work of the author was begun in the hope that it might be possible to produce similar clinical pictures by means of specific cytotoxins, selective in their action on the thyroid and parathyroid cells. The chief results of the work may be summarized as follows:

The serum of goats injected with the suspension of thyroid gland or with the thyroid colloid matter of dogs acquires many new and striking properties. Injected into dogs it causes marked symptoms, prominent among which are depression, convulsions, vomiting, rapid breathing, hemoglobinuria, and early death in some cases, and in other animals that lived longer there was present also some fever, lachrymation, loss of weight, and progressive weakness. It cannot be claimed that there has been reproduced the exact picture presented by thyrodectomized dogs. These clinical manifestations are associated with removal of colloid matter from the acini, followed in time by restitutive processes and the growth of papillary proliferations. The parathyroid bodies and the hypophysis show no changes. The liver, spleen, and kidneys present marked degenerative and pigmentary changes, which in large measure may be the result of the hemolytic properties of the serum injected, although it is possible that thyrotoxic serum contains cytotoxins for the cells of the liver and kidneys also.

In vitro, the thyrotoxic goat serum is more destructive and agglutinating for thyroid cells of the dog than normal goat serum. The toxic serum is markedly agglutinating and hemolytic for dogs' corpuscles even when obtained from goats injected with bloodless thyroid material and with colloid matter—an observation of great importance as regards the problem of community of receptors in various cells.

* * *

CHRONIC INTERSTITIAL NEPHRITIS IN THE YOUNG. José L. Hirsh. *Journal of the American Medical Sciences,* June, 1904.

This condition of the kidney, while very common in old age, is rather rare in the young, a fact which is readily explicable when we consider the cause of same. Most common among them is gout, chronic lead poisoning, alcoholism, overfeeding, syphilis, and diabetes mellitus, conditions acting slowly and for the greater part associated with adult life. The relation of arteriosclerosis and kidney disease is still uncertain; either may be primary to the other. While in adults the proportion of cases of chronic interstitial nephritis in males to females is 2 to 1, the writer has found that in children a larger number of females than males are affected. There are not more than 30 cases of this type on nephrtis in children reported in which an autopsy has confirmed the clinical diagnosis. The literature on the subject is reviewed in some detail, and the writer reports two cases of contracted kidney in the young, both associated with alterations in the blood-vessels, though of an entirely different nature:

Case I. A white boy, aged 15 years, who entered the hospital on account of uncontrollable hemorrhage of the gums. This was soon relieved, and further examination showed a hypertrophied heart with a marked accentuation of the second aortic. Urinary examination showed a small amount of albumen, a few granular and hyaline casts, specific gravity 1012, and an increased amount of urine. Death followed in five weeks. Autopsy showed typical granulated kidneys, the left weighing 68 grams and the right 80 grams. The aorta was decidedly atheromatous throughout, a condition which is comparatively rare at this time of life.

Case II. A white girl, aged 18 years, complained of frequent urination and inability to control her bladder. Physical examination showed some anasarca of the lower extremities and enlarged heart. The urine was increased in quantity; specific gravity 1010; small amount of albumen; no sugar; granular and hyaline casts.

Autopsy 12 hours after death. The heart was somewhat enlarged; the kidneys were extremely small—in fact, probably the smallest recorded in this condition. The right kidney measured 5x2.5x2 cm. and weighed 18 grams; the left measured 4.5x3x1.5

cm. and weighed 22 grams. Both macroscopically and microscopically the lesions were those of an advanced chronic interstitial nephritis.

The aorta was abnormally small; at its origin it measured 4.8 cm. Throughout its entire extent it admitted the little finger with considerable difficulty. There were no evidences of atheroma. The relationship between congenital narrowness of the aorta and the arterial system and primary atrophy of the kidney has been noted by several French authors.

A table giving the size and weight of cases of reported primary contraction of the kidney in the young is appended.

Society Reports.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD MONDAY, MAY 2, 1904.

Dr. Cushing showed a negro baby of eight months old with hydrocephalus. The patient—the second child of healthy parents—had shown signs of this condition for three months, and at present the parietal bones were 10 cm. apart. All the separate cranial bones could fairly easily be outlined by palpation. The contained fluid was apparently under great tension, and the child's head had been tapped, 200 c. c. of clear fluid having been drawn away from the ventricles. Circulation of the cerebro-spinal fluid probably takes place from the choroid plexus to the longitudinal sinus and thence out through the sinuses to the circulating blood and the heart. The escape has usually been thought to take place via the Pacchionian bodies, but as these are not present in young infants or in anthropoid apes, and as complete injections are possible in both, this idea is probably wrong. Internal hydrocephalus is certainly due to some obstruction, but Dr. Cushing doubted that this obstruction is situated at the foramen of Magendie, as is usually supposed. The operation now done is a lumbar one. A preliminary lumbar puncture is first done to make sure of a connection between the ventricles and spinal canal. The fluid is usually found to be under great tension. A trephine hole is then made in one of the lumbar vertebrae by means of an abdominal section, a silver drainage tube inserted, and the spinal canal thus permanently connected with the post-peritoneal loose connective tissue. Dr. Cushing has operated on four cases in this way. The first died of intestinal obstruction, the second and third immediately after the operation, but the fourth is now living (six months after operation), and the head is staying nearly normal in size.

Dr. Lambert reported a review of his experience with chronic alcoholism in Bellevue Hospital. In the past nine years 51,000 alcoholics have been treated there, and of this tremendous number 66 per cent. were between 30 and 49 years of age. Delirium tremens is usually thought of as primarily a nervous condition, but the effect of alcohol on the heart and circulation is its most important effect so far as the life of the individual is concerned. Alcohol gives an early vascular dilation. It causes a fall in temperature (the lowest temperature recorded in this series was 80° by rectum). There is a direct or indirect stimulation of respiration, and an inhibition of proteolysis when liquors are drunk rich in alcohol or in extractive content. A moderate amount probably increases digestive powers. As a food it takes the place of an equal amount of isodynamic carbohydrate, and so protects the proteids, but in large doses it increases the proteid katabolism. A series of 125 cases was studied carefully by Dr. Lambert. He found that, as a rule, male alcoholics live longer than female. The autopsies showed frequent heart lesions. Brown atrophy and fatty degeneration often occurred. In the lungs edema and congestion were most frequently seen. In the liver fatty degeneration was found in about 15 per cent. of the cases. Cirrhosis was frequent, though it is interesting that this condition has never been experimentally produced in animals. The liver was normal in no case. Chronic fibrosis was the commonest condition seen in the pancreas. The kidneys were never normal, the nephritis being chronic in all but two patients, and the parenchymatous variety being most frequent. In the stomach atrophic gastritis was found in 50 per cent. of the cases. Atrophy of the ovaries was frequently seen. The brain was almost always edematous, acute and chronic meningitis occurred frequently, and atheroma of the cerebral vessels was not unusual. The essential pathological processes caused by alcohol in the various organs of the body are hyperemia, degenerations (particularly of the fatty kind), and connective-tissue proliferation. The cases are often treated entirely for their nervous symptoms when the circulation needs treatment most. The symptoms vary markedly with idiosyncracy and with the dilution of the alcohol used. The habit of chronic alcoholism is often started quite young—in many patients of this series before 21. The drug is taken not for its taste, but for the narcotic effect—that is, either to produce certain feelings of artificial well-being or to drown sorrows, pain, etc. It is not the fusel oil, but the larger amount of alcohol for the same money which makes cheap whiskey so dangerous. By the coating of the tongue and the character of the tremor the length of a spree may be quite accurately estimated. Hallucinations of sight are most frequent, and of smell quite rare, the most characteristic feature being the belligerent attitude which the patients assume toward their delusions. An acute infection or a blow on the head may bring on delirium tremens in a moderate drinker. Beer causes the condition slowly, but it leaves as slowly. Patients who drink absinthe are particularly liable to convulsions. In this series the mortality was 3 per cent., but in the cases in which ergot was used it was only 1½ per cent.

Dr. Welch referred to the complete report of the committee of fifty on the physiological effects of alcohol. It was found that in rabbits receiving daily intoxicating doses of alcohol, though some died of alcoholism, many lived healthy for periods as great as three years. The changes in the ganglion cells were among the most frequent pathological conditions found in the central nervous system.

Dr. Campbell reported a study of cystinuria in which it was found that cystin probably represents a middle product in the metabolism of sulphur.

Dr. Emerson referred briefly to a case of pulmonary distomiasis, reporting the case for Dr. Stiles.

MEETING HELD MAY 16, 1904.

Some recent work on the blood in pregnancy, done in the obstetrical ward of the Johns Hopkins Hospital, was reported by *Dr. Thompson*. The subject has received a good deal of attention since the time of Morgagni, but the attention has been confined largely to fruitless discussion. Three conditions have been reported as found—either (1) no change; (2) an increase in the red-blood cells and diminution of the hemoglobin, or (3) an increase in hemoglobin and diminution in the red-blood cells. Many also have held that the blood condition depends on the general condition, and not on the presence of pregnancy. A leucocytosis has often been observed, and has been explained as due to a local irritation, a higher count having been found in the blood from the cervix than in that from the thumb. Virchow thought a change in the pelvic lymphatics probably explained the phenomenon, and other observers have connected it with the breast changes, where a round-cell infiltration occurs. A fall in specific gravity corresponding to the drop in red-blood cells has also been observed. The 12 cases stndied there reported were all negroes but one. All were well and were kept on the same diet. They were followed from October, 1903, to May, 1904, each being examined completely once a month. The red cells were found to be high at the extremes of pregnancy, and an irregular rise as pregnancy comes on was noted. The hemoglobin was low until the seventh month, but at the ninth month averaged 85 per cent. There was a slight absolute leucocytosis, the average count being 9000. Ehrlich's stain showed practically normal proportions of the different species of leucocytes. The specific gravity was found to be high early in pregnancy, diminishing later, again to rise toward the end. Possibly the changes in the water output, pointed out by Slemmons, may explain this phenomenon.

Dr. Emerson, in complimenting the author of this paper on his results, said that what was needed in blood work was not a study of many cases, but of a few cases carefully observed, and Dr. Thompson's work on the specific gravity of the blood was of particular interest.

Dr. Halsted reported a case of benign bone cyst. The patient, a boy of seven years, had had a fall five years before admission which had rendered him unconscious, and had "broken" his left thigh below the trachanter. Three weeks afterward he was walking with a crutch. Some time later the leg was wrenched; the thigh became swollen at its middle, and motion became impaired. There was no crepitus, false motion, or tenderness. Skiagraph showed a swelling reaching up to the head of the femur, having the characteristics of a cyst. Operation was done, and a cyst filled with brownish fluid found. The new growth invaded the medullary canal, but was evidently benign, and the leg was not amputated, the tumor being excised and the head of the bone enucleated. Pathological examination showed the specimen to contain a good deal of cartilage, with several small and one large cyst. Strictly, it was a fibroma, though microscopically it looked a good deal like a sarcoma. Islands of misplaced cartilage, as Virchow said, often produce cysts, and if it be remembered how active resorption is in the young the origin of such a tumor is easy to understand.

Dr. Bloodgood reported a case of gastrectomy done for an early ulcer or cancer. The patient, a man of 30, complained of pain in the epigastrium, not confined to one side or the other, but situated in the middle portions and about under the ensiform. There was no rigidity, muscle-spasm, or tenderness. Operation was done, some inflammatory infiltration of the omental fat found, enlarged glands palpated on the lesser curvature, and a gastrectomy by Billroth's first method done. Recovery was uneventful and the patient is now well. The specimen showed an ulcerated patch on the stomach wall. Dr. Bloodgood said that the statistics of the surgery of carcinoma of the stomach showed conclusively that we must get the cases earlier if we are to accomplish anything.

Dr. Halsted reported a similar case on which he had recently operated. In this case there was an ulcer palpable through the abdominal wall, and the patient had been shown to the students as a most typical case of gastric ulcer. At operation enlarged glands were found on the greater curvature, and these were on section carcinomatous. Gastrectomy for cancer was done by Billroth's second method. The man is now well, his weight has increased 30 pounds, and he eats everything.

Dr. Emerson, referring to the chemistry of the gastric secretion in early cases of cancer, said that when a cancer grows on an ulcer the hydrochloric acid varies greatly in amount from day to day, and this fact may be of assistance in early cases.

Dr. Emerson, referring to the specimens which he exhibited of the first case of pulmonary distomiasis to be reported in this country, gave a slight account of this condition. The disease occurs with great frequency in Japan, Formosa, and elsewhere. The chief, if not the only, symptom is hemoptysis, with final death from anemia. Between the hemorrhages the sputum remains rusty. The case shows the value of fresh sputum examination.

Book Reviews.

PROGRESSIVE MEDICINE: A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia, etc., assisted by H. R. M. Landis, M.D. Volume II, June, 1904. Surgery of the Abdomen, including Hernia—Gynecology—Diseases of the Blood—Diathetic and Metabolic Diseases—Diseases of the Spleen, Thyroid Gland, and Lymphatic System—Ophthalmology. Philadelphia and New York: Lea Bros. & Co. 1904.

The four contributors to this volume are William B. Coley, John G. Clark, Alfred Stengel, and Edward Jackson. Coley's article considers the present status of the surgery of the abdomen, including hernia. This article is particularly full and interesting as to the surgery of the stomach.

Prof. John G. Clark contributes an excellent report on gynecology.

Alfred Stengel's contribution treats of the blood through some 40 pages. He considers also rheumatoid arthritis, gout, diabetes, ochronosis, infantile scurvy, and tuberculosis of the lymphatic system.

Edward Jackson of Denver furnishes the concluding chapter of the book, a 30-page review in ophthalmology.

"Progressive Medicine" makes in the present series a change of binding which many will find advantageous. Bound in good paper, this quarterly costs less, and subscribers can have each series bound in one, or, better, in two volumes.

Diseases of the Intestines and Peritoneum. By Dr. Hermann Nothnagel of Vienna. The entire volume edited, with additions, by Humphrey D. Rolleston, M.D., F.R.C.P., Physician to St. George's Hospital, London, England. Octavo volume of 1032 pages, fully illustrated. Cloth, $5 net; half-morocco, $6 net. Philadelphia, New York and London: W. B. Saunders & Co.; Baltimore: Medical & Standard Book Co. 1904.

This, the eighth volume of the English translation of the Nothnagel series, and from the pen of Nothnagel himself, presents its subject-matter in as able and satisfactory manner as the preceding volumes.

Preceding Nothnagel's contribution, there appears an interesting discussion of the chemical processes that occur in the intestine by Obermayer, and a treatise of some length by Wanneberg on the bacteria of the intestinal canal and the part they play in the normal and pathological processes of the digestive tract.

The subject of the diseases of the intestine and peritoneum is treated by Nothnagel in his characteristic style; the various pathological conditions are taken up and discussed in a thorough and systematic manner, and the book is filled with personal observations of the greatest value. The bibliography at the end of the volume is full and must prove of real value to the specialist in this field, although the contributions of importance to the various investigators in the domain of intestinal diseases are thoroughly taken up in the text.

The volume is edited by Rolleston, who has added much to the value of the work by incorporating in it the results obtained by English and American investigators in this field. B.

Electro-Diagnosis and Electro-Therapeutics: A Guide for Practitioners and Students. By Dr. Toby Cohn, Lecturer on Applied Electricity at Dr. Mendal's Polyclinic on Diseases of the Nervous System, Berlin. Translated by Francis H. Scratchly, M.D., Chief of Clinic, Diseases of the Nervous System, and Instructor in Electro-Diagnosis and Electro-Therapeutics, University and Bellvue Hospital Medical College; Consulting Neurologist to the Home for Incurables, New York. Price $2 net. New York and London: Funk & Wagnalls Company. 1904.

The periodical medical renaissance which electricity undergoes in its more or less regular cycle, and which may be said to have now again reached its fastigium, has been productive of the crop of books always inspired by an awakened public and professional interest. Only a certain number have been able to show the practical justification always tacitly demanded and rightfully expected of a new work, namely, that it should occupy a new field in learning, or smooth in some way the path of knowledge. To cast a load of bricks into an already filled and leveled quagmire along the highway of knowledge is better calculated to obstruct than to aid the traveler along its course.

Viewed from this severely utilitarian standpoint, Dr. Cohn's book carries its justification as much, or even more, perhaps, than if it accomplished its declared purpose—to present a practical working knowledge of electricity to those ignorant of its principles. No efficient kindergarten course in Euclid has yet been devised, and to one who follows the accurate and careful precision of Dr. Cohn's methods the end of such a plan applied to electricity soon appears.

It is indeed lamentable that so many physicians should now be using in the treatment of the sick a force of whose elementary principles they are ignorant. It is not strange that clinical reports should be so varied and indecisive; the only wonder is that excellent results should be frequently accomplished.

Like other books of its kind, a large amount of time and space is wasted in the endeavor to communicate the absolute elementary principles of electricity to those who should be already thoroughly grounded. In Dr. Cohn's book all theoretical considerations are given either as notes or as fine-type paragraphs, and do not interrupt the sequence of practical objects.

The methods of generation, discharge, and the connections necessary to produce the various electric potentialities are very clearly illustrated by diagrammatic plates. It is unfortunate that the translator should have retained many terms and expressions not usually employed by English and American electricians, and likely to confuse the beginner.

Dr. Cohn is to be commended for his careful conservatism in estimating the effects of electric currents. He does not attempt to deny the occurrence of suggestive and psychic effects with electric treatment, but, on the contrary, advises their proper use as adjuncts to the physiologic effects proper of the electric currents.

To the high-frequency currents—Teslaization, *x*-ray, and static discharges—Dr. Cohn makes brief and slighting reference. Apparently he ignores the results obtained by many American and French workers in whom the profession has confidence. Certainly it is difficult to convince the impartial observer that the high-frequency currents which produce such remarkable physical effects should be without physiological action.

As regards the galvanic and faradic currents, with which the work largely deals, the therapeutic application must be admitted to possess both limitations and uncertainties. The diagnostic application of the electric, galvanic, and faradic currents, on the other hand, possess both the certainty and accuracy to make them of the highest value.

The schemes of examination and diagnosis are particularly to be recommended for their clearness and accuracy. The description of apparatus is equally clear. Particularly helpful are the anatomic plates illustrating the excitable nerve and muscle points.

All persons interested in medical electricity will find this book valuable and interesting. Persons not possessing a thorough knowledge of electrical principles will not, on the other hand, become expert electricians from its perusal.

Psychic Life and Laws; or, The Operations and Phenomena of the Spiritual Element in Man. By Charles Oliver Sahler, M.D. London, New York and Melbourne: Fowler & Wells Company.

A foolish book; an ignorant book; a book of stupendous mendacity.

MARYLAND MEDICAL JOURNAL.

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BALTIMORE, SEPTEMBER, 1904

DR. OSLER TO LEAVE AMERICA.

IN June, 1905, Dr. William Osler, after 16 years of most fruitful and distinguished labor in Baltimore, will go to England to become Regius Professor of Medicine in Oxford University. This news delivered a very sensible shock to the people of Maryland and stirred the medical profession profoundly. Perhaps we shall adjust ourselves in the interval before his departure, though the loss of such a leader seems well-nigh irreparable.

The distinction which his services have conferred upon the university and upon this city will remain after him, and the strength which he has imparted to the medical profession in Maryland will not be gone from us with his going. After his services to Johns Hopkins University and to American medicine have been fully and fairly appraised there remains a consideration more weighty than either of these things, namely, the moral energy of Osler the man, and this it is which will make his influence permanent.

It is not yet time to sum up his career in Baltimore, but we express the hope that his removal will serve, as such severances often do, to fix upon the future history of medicine in Maryland those characteristics which we who know him best recognize in Osler.

THE OPENING OF THE SCHOOLS.

THIS is the season when fresh postulates for the degree of doctor of medicine begin to move toward the diploma markets. They will number quite an army, these neophytes, when they arrive in Baltimore, and they will be received with carefully-prepared and elaborate enthusiasm if they call at the right recruiting stations. Most of them will have conned several catalogues of as many seats of medical learning. Most of them have been a bit intimidated by the apparent uniformity of what are called requirements for admission. Most of them will have been encouraged by alternatives, exceptions, and conditions. Most of them will avail themselves of alternatives, exceptions, or conditions. Not many will take entrance examinations. Of these but few, very few, will be declined by the examiners, and none, absolutely not one, need return to more appropriate surroundings on account of failure. Any man who can read a college catalogue can begin the study of medicine in Baltimore. Having neither time nor capacity to prepare for any intellectual pursuit, one may still undertake the study of medicine with a fair prospect of getting a diploma of some sort, somewhere, at the end of about four years. After examination comes the State examination, a wholesome terror to the honest or honestly-inclined student, and a negligible proposition to the unscrupulous.

The State Board of Medical Examiners of Pennsylvania, at the recent examinations, rejected nearly 20 per cent. of the applicants for license. We are not informed what per cent. of medical graduates intending to practice in Pennsylvania presented themselves for examination. The 73 who failed were one-fifth part of those who were good enough to desire to comply with the laws of Pennsylvania. According to the State Board of Examiners, the quality of instruction furnished by the medical colleges is largely responsible for the high percentage of failures. Some colleges, it is said, devote so much time to the specialties of medicine that the students do not learn the general principles of the science. An ungentle corrollary to this remark is that some teachers are so poorly grounded in the broad principles of medical science that their teaching is necessarily restricted to those specialities in which they are tolerable craftsmen. A more interesting observation is that many applicants failed on account of general illiteracy.

The subject of general illiteracy has been somewhat discussed by the medical examiners and the profession in Maryland. The examiners have not, so far as we know, published any decided opinion on the subject, but a good many teachers are openly, and even loudly, of the opinion that in rating examination papers the examiners have no right to consider the evidences of illiteracy. They say that a man's orthography may be ever so bad, and yet he may be a very good practical physician. One must admit that in exceptional instances this is true.

Very likely those who object to an inquiry after graduation hold the same view concerning the determination of fitness at the outset of the medical course. Their practice may be consistent either with their personal views or with the representations in the catalogues, but hardly with both. No one has heard of any mortality among undergraduates on account of illiteracy. Rejections at the beginning and failures in course only bring about a change of scene for the student. If he is persistent and has the price, he secures a diploma nevertheless, so that the ostensible requirements of general education are of no service in eliminating the unfit.

There was a time when the country required more physicians than her population could supply upon conditions of good general training, but that time has long passed. In those days the country needed merchants who could only keep accounts by means of notches on a stick or knots on a string. No one contends that a man who can write and do simple arithmetic is too well educated to keep a country store. But we are told that physicians who understand elementary algebra and physics, and can write 200 words of decent English, have too good an opinion of themselves to settle contentedly in country neighborhoods. There is a little truth in this, for a great ruck of inferior graduates do their miserable best for better educated miners, sailors, farmers, ranchers, and lumbermen.

But if the half-educated physician would be unhappy in such surroundings, what must be his case in a large community, professing a science without mystery, built upon the natural sciences whose rudiments are less familiar to him than to a well-qualified engineer or newspaper man, schoolmarm, farmers'-institute lecturer, deputy fish commissioner, mine inspector, veterinarian, dairyman, well-digger, weather observer, electrician, brewmaster, undertaker, or even lawyer.

NEWSPAPER MEDICINE.

THE daily papers now recognize a growing popular interest in medical matters, and well-written articles command a ready sale. The preparation and sale of popular articles to the lay press naturally does not appeal to physicians who are fully engaged in professional work, and the supply is drawn from very poor sources. There is no doubt that the newspapers would greatly prefer the work of good men, and it is an absolute waste of professional opportunity to allow the publishers so little discrimination in the choice of material. It is in the power of many first-rate physicians, and beneath the dignity of none, to give the general public most interesting information, which is at the same time wholesome.

The Sunday papers recently published an example of very bad scientific literature in an article copyrighted by one Viskniskki, and written by a Dr. Marion T. Haslett, whose name does not appear in Polk's Directory. His title is "What to Do in Danger," and the particular dangers which he considers in three columns are the bites of dogs and snakes. This blind guide advises one who is bitten by a dog to suck the wound and to dismiss the last shade of suspicion that the dog may have been rabid. After a dog bite one may die of fright, but not of rabies. True rabies, he says, is extremely rare, while simulated rabies is not uncommon. Of course, he quotes Rosse and Dulles, and misquotes more authoritative men. The sources of misinformation in the subject were somehow accessible to this writer. If one fails to suck out the fear of rabies, one may take a vapor bath. The dog takes his chances, and the writer knows of no case of rabies in a dog, though he accounts for more than a quarter of a million dogs who were not rabid.

It is well enough to diminish the popular fear of dog bites, but to discredit the existence of rabies would be the reverse of a public service if such a dangerous disbelief could be lodged in the public mind. Rabies in man is so rare in America that but 128 persons died of it in the United States in 1900. It is so uncommon that probably no more than 128 persons were attacked by the disease. The distribution of the deaths was, however, such that there is probably no doubt whatever of the existence of rabies in the localities where these deaths occurred. In Alabama 12 deaths from rabies occurred, all in one neighborhood; in Texas 12, in Illinois 14; here, too, fatalities were bunched in a way that suggests local outbreaks of something more substantial than fear. Outbreaks of rabies are rather convincing indeed at close range. Baltimoreans believed in rabies some years ago when a dog in one day frightened ten or a dozen children so badly that eight of them died in the course of the following six weeks.

Dr. Haslett's advice about snake bites is more detailed. If bitten, you are to suck "for all you are worth." You must take whiskey enough to quell the "blues," but not enough to be exhilarated, and thus, neatly poised between a funk and a jag, you should go to a doctor. If you go in for frills, you may allow the doctor to inject the ever-ready antivenene. In case you cannot find a doctor, you should maintain your alcoholic disequilibrium for a week or longer.

Medical Items.

Western Reserve University at Cleveland will establish a tuberculosis dispensary.

Zion, Dowie's Zion, has 16 cases of smallpox, and nearby towns are alarmed thereat.

Smallpox has been absent from Maryland for the past two months.

Perryville, Cecil county, and Eastport, Anne Arundel county, report outbreaks of typhoid fever.

Baltimore Medical College has new laboratories of clinical pathology and operative surgery.

The German medical profession has issued a circular discouraging young men who propose to study medicine.

Dr. Bosley, commissioner of health, recommends the establishment of sanatoria for the consumptive poor of Baltimore.

The daily papers are canvassing the merits of possible successors to Dr. Osler in the faculty of Johns Hopkins Medical School.

Dr. George F. Shrady has resigned as editor of the *Medical Record* after 38 years of service. He is succeeded by Dr. Thomas L. Stedman.

In Brookline, Mass., milkmen are now forbidden to ring bells or make unnecessary noise when delivering milk in the early morning hours.

Typhoid fever in Pittsburg. This ad. to be continued in all the weekly medical journals and in the daily papers until further notice and at line rates. No display.

The regulations governing medical inspection of schools in the District of Columbia have been amended recently quite extensively, so that better results are expected.

The University of Maryland will open a department of pharmacy. The new building for the dental department and for laboratories of physiology and pathology are completed.

The name of Dr. William T. Jenkins has reappeared on the roll of the health department of New York city. The former chief of the department is now a sanitary engineer.

Dr. Charles Cockey of Queenstown, Md., died on August 8. He was a graduate of the University of Maryland in 1866, and had but recently retired as health officer for Queen Anne county.

Smallpox is still active in Virginia, but has diminished in Pennsylvania, and subsided in Delaware. Maryland's prospects for escape this winter seem at present better than at any time since 1897.

The Philadelphia Bureau of Health is having good success in the disinfection of houses with the formaline spray. A 2 per cent. watery solution of formaldehyde is used, the amount for each 1000 cubic feet of space being that equivalent to a pint of the 40 per cent. solution known as formalin.

A new line of work looking to the determination of sex is going forward at Florence, Italy, by Ducceschi and Tallarico, whose plan is to produce a cytotoxic serum for the special sexual cells, and to inject male or female cytotoxins during pregnancy, thus controlling the sexual development of the embryo.

The city council of Seneca has passed an ordinance imposing a fine of $3 to $20 upon persons found guilty of spitting on the sidewalks. All they need in Seneca now is a speed regulation for automobiles, with adequate fines. Satisfactory prices for spitting and speeding will attract the smartest sports. This Seneca is in Illinois.

The date of the semiannual meeting of the Medical and Chirurgical Faculty has been changed to September 9 and 10. Headquarters will be at the Plimhimmon Hotel, Ocean City, where a special rate of $2 a day is given from the 8th to the 12th. Excursion rates are also available over the Baltimore, Chesapeake & Atlantic Railway. The seashore is particularly attractive at Ocean City in September, and a good attendance is expected.

THE Mount Savage outbreak of typhoid fever numbered 120 cases, with three deaths. It is not over, but apparently subsiding. The outbreak was explosive in character, and has been traced with a fair degree of probability to a person who came from another State sick with the disease and occupied a house on the mountain side above the springs supplying water to the families below.

THE conditions of admission to examination for license to practice medicine in Missouri have been made more stringent on the point of preliminary education. Candidates must present evidence of possessing a university, college or high-school education, or, failing this, must pass an examination before the State superintendent of public education upon all the subjects embraced in a high-school course. Good, if true.

THE Baltimore county commissioners have declined to pay certain bills for post-mortem examinations' on the ground that many of them were unnecessary. Undoubtedly a great many useless post-mortems are made in Baltimore county, as in other parts of Maryland. Too often the question of their propriety is settled on the consideration of who made the autopsy, and without reference to the circumstances attending the death. The money spent in useless coroners' inquests in Maryland would pay for all the disinfections provided for in the laws of the State.

THE Baltimore newspapers found quantities of easy copy in Mr. Quick's dream that a few cents' worth of sulphate of copper might postpone indefinitely the need of a million-dollar filtration plant for Baltimore's water supply. The proceedings were quite serious for a week or so, and some people learned to spell and pronounce chroococcus. But in the matter of dying for the cause the chroococci were not unanimous, and the colon bacilli were of the contrary opinion. The water department will not drag the vitriol bag in the waters of the lake, but may drag the anise bag about its sylvan banks.

THE State Board of Health has completed a report upon the complaint of St. Louis that the drainage of Chicago fouls the water supply of St. Louis. The conclusions are as follows: 1. The water supply of St. Louis is taken almost entirely from the Missouri river. 2. The water of the Illinois river is so much purer than that of the Missouri that if the city of St. Louis took large quantities from the Illinois river, the water supply would be better than it is coming from the Missouri. 3. The increased flow of Lake Michigan water, in addition to the sewage coming through the drainage canal, has improved the quality of the Des Plaines and Illinois rivers. 4. The contamination of the Illinois river through the farm, village, and city drainage, and sewage from commercial enterprises, is probably greater than that from the drainage canal under present conditions.

THE fourth Pan-American Medical Congress, which was to have convened the latter part of December of this year at Panama, has been postponed until the first week in January. This was done at the request of many physicians who proposed to attend it, as they desired to be at home with their families during the Christmas holidays. The delegates from this side of the continent will therefore leave on Tuesday, December 27, if they go down from New York by the regular Pacific Mail lines, or at other dates if they go by way of New Orleans or Jamaica. The dates of sailing from the Pacific coast have not yet been ascertained. The congress will be held from the 4th to the 7th of January. The officers of the congress, appointed by President Amador of the Republic of Panama, are: Dr. Julio Icaza, Dr. Ciro Uriolo, Dr. J. Calve, and Dr. Carlos Cooks, Panamanians; Dr. Gorgas, chief of the Panama Canal Sanitary Commission; Drs. Carter and Ross, Americans; Dr. Manuel Corales, Cuban; Dr. M. Stern, English, and Dr. Oduber, Dutch. The congress bids fair to be the most successful Pan-American medical congress that has ever been held on account of the central situation of Panama and its easy approach from both sides of North America, Mexico, and the Central American Republics, as well as from the countries on the north and west sides of South America. There will be but four sections at this congress—surgery, medicine, hygiene, and the specialties.

MARYLAND
MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 10 BALTIMORE, OCTOBER, 1904 Whole No. 1037

REMARKS ON THE ETIOLOGY AND TREATMENT OF DIABETES MELLITUS.

By Thomas B. Futcher, M.B. (Tor.),
Associate Professor of Medicine, the Johns Hopkins University.

READ BEFORE THE CLINICO-PATHOLOGICAL SOCIETY OF WASHINGTON, MAY 3, 1904.

(Concluded.)

ADRENAL GLYCOSURIA.

In 1901 F. Blum reported the results of his experiments in connection with adrenal diabetes. He found that the subcutaneous injection of an aqueous extract of adrenalin produced glycosuria in 22 out of 25 animals experimented upon. Herter[6] in 1902 published the results of a series of instructive experiments, showing the effect that adrenalin chloride and solutions of other reducing substances have when painted over the surface of the pancreas. Commercial aqueous solutions of adrenalin chloride, 1 to 1000, was used in the research. He first showed that the subcutaneous, intravenous, and intraperitoneal injections of adrenalin chloride into dogs were almost invariably followed by glycosuria. Peritoneal injections, other conditions being equal, produced the most marked glycosuria, 10 per cent. or more of sugar not being uncommon. The glycosuria lasts usually somewhat more than 24 hours. It was important to find whether the more marked result following intraperitoneal injection of adrenalin chloride were due to the opportunity for more direct action of this substance on the pancreatic gland. Accordingly, the pancreas was exposed in a number of normal dogs and adrenalin applied directly to the presenting surface by means of a brush. It was demonstrated that marked glycosuria followed the application of small quantities of adrenalin to the pancreas—quantities which when applied locally to other parts of the body either gave rise to no excretion of sugar or to a trivial glycosuria.

The next problem was to determine how the local application of adrenalin to the pancreas produced glycosuria. It was first shown by experiment that it was not due to vascular disturbances. Adrenalin chloride is known to be a very powerful reducing substance, and it was decided to ascertain the effect that other reducing substances had when applied directly to the pancreas. The thought suggested itself that the use of such reducing substances might interfere with oxidation within the pancreatic cells. Local applications of potassium cyanide were first tried, and they constantly produced a glycosuria. Similar results were obtained with sulphurous acid, ammonium sulphide, sulphuretted hydrogen, illuminating gas, carbon monoxide, and several other reducing substances. A number of similar experiments were carried out with substances which do not reduce, such as sodium chloride, sodium hydroxide, ferric chloride, hydrochloric acid, bromine water, etc., without the production of glycosuria in any instance.

Herter concludes from these experiments that there is a close relationship between the reducing power of a substance and the capacity it possesses of inducing glycosuria when applied directly to the pancreas. He believes that the amount of oxygen which these substances remove from the cells of the pancreas is sufficient to cause a disturbance of the function of the gland.

Histological examination of the gland tissue at the height of the glycosuria fails to show any recognizable lesion. Herter does not believe that the glycosuria is due to the loss of function of the islands of Langerhans in his particular experiments.

It is pointed out that these experiments are of clinical importance in that they probably throw considerable light on several varieties of human glycosuria and diabetes cases. Herter suggests that the glycosuria following conditions of asphyxia, as after epileptiform seizures, may be due to interference with oxidations in the pancreas; so also with the glycosuria following carbon-monoxide poisoning.

GENERAL REMARKS ON THE TREATMENT OF DIABETES MELLITUS.

Time will not permit me to do more than give a very brief, general outline of the management of a case of diabetes mellitus. One of the most important things to observe in the treatment of a case is the patient's weight from week to week, because the weight of the individual is undoubtedly the best criterion of the success of any line of treatment. If the patient become a glycosuric—that is, if the sugar disappear from the urine and he steadily loses weight under any form of treatment—it must be considered unsatisfactory. It is a good deal better for a patient to eliminate a certain amount of sugar and hold his weight or gain in weight than for him to be free from sugar in his urine and lose weight, and this fact must be taken into consideration, particularly in outlining a diabetic diet for any particular individual.

The condition of the patient's bowels must be carefully looked into. Diabetic patients are usually constipated, and it is very important that this condition should be corrected, because those who are constipated are more likely to develop diabetic coma than those who are not.

As the dietetic treatment of diabetes is the form that has proved most satisfactory, my remarks will be largely confined to the arranging of the dietary. When a new case of diabetes comes under observation, either in hospital or private practice, it should be our first duty to determine the severity of the case. This is done by ascertaining the power of the individual to warehouse carbohydrates. In order to determine this the patient should be placed on a mixed diet containing carbohydrates for three or four days and the sugar quantitatively determined, and then on an absolute non-carbohydrate diet for a period of from three to six days. The diet which we use at the Johns Hopkins Hospital for this purpose is a modification of one used by von Noorden. It is as follows:

Breakfast—7.30 A. M.—200 c. c. (6 ounces) of tea or coffee without sugar or cream; 150 grams (5 ounces) of beefsteak, mutton chops or boiled ham; one or two eggs, with plenty of butter, pepper and salt; 30 grams (1 ounce) of butter, with steak and eggs.

Lunch—12.30 P. M.—200 grams (6 ounces) cold roast beef; 60 grams (2 ounces) celery, fresh cucumbers or tomatoes, with vinegar, olive oil, pepper and salt to taste; 20 c. c. (5 drams) whiskey, with 400 c. c. (13 ounces) water; 60 c. c. (2 ounces) coffee, without milk or sugar.

Dinner—6 P. M.—200 c. c. (6 ounces) clear bouillon; 250 grams (8 ounces) roast beef; 20 grams (5 drams) butter; 80 grams (2 ounces) green salad, with 10 grams (2½ drams) vinegar and 20 grams (5 drams) olive oil or 3 tablespoonfuls of some well-cooked green vegetable; 3 sardines *a l'huile;* 20 c. c. (5 drams) whiskey, with 400 c. c. (13 ounces) water.

Supper—9 P. M.—2 eggs (raw or cooked); 400 c. c. (13 ounces) water.

This diet is subject to modification so far as quantity is concerned in any individual case, the important consideration to be kept in mind being that the articles should be free from carbohydrates. One thing I wish to here emphasize, and that is, if the patient has previously been taking carbohydrates the latter should be gradually cut off for two or three days before the patient is placed on the strict diet. If this is not observed, particularly in severe cases, one runs the risk of producing diabetic coma, because any sudden radical change in the diet of a diabetic is liable to induce this dangerous complication.

If after the patient has been on this diet for three to six days he become aglycosuric, the case may be placed in the "mild" group of diabetics. On the other hand, if he continue to excrete sugar at the end of this period, it means that the subject is manufacturing carbohydrates from his tissue albumens, and the case must be placed in the "severe" group. In these cases which fail to become aglycosuric Naunyn has used a further expedient in order to remove the hyperglycemia, and that is the institution of a "*hunger tag*" or "*hunger day*." If, on the strict diet, the patient continue to excrete from 0.1 to 0.5 per cent. of sugar in the urine, he endeavors to get the consent of the patient to starve himself for 24 hours. Certain of these cases are rewarded with the disappearance of the sugar from the urine. In others, however, a certain amount of sugar continues to be excreted, and these are the severest cases of all, because the persistence of the glycosuria means that the disturbance of carbohydrate metabolism is of the gravest kind. Naunyn finds that by eliminating the hyperglycemia by a non-carbohydrate diet, or by the prescribing of the *hunger day*, the tissues seem to get a rest and the capacity of the organism to warehouse carbohydrates becomes manifestly increased. The individual afterwards is then able to take carbohydrates in moderate amounts without the production of a glycosuria, which they were unable to do before they were placed on the strict regimen. Naunyn advocates that diabetics should be placed on a strict non-carbohydrate diet for a week or 10 days at intervals of every three or four months in order that the tolerance of the system for carbohydrates may be increased. I have followed this course in private cases with satisfactory results.

It will not do to keep a diabetic on an absolute non-carbohydrate diet for any length of time, owing to the great danger of coma ensuing. Further, the patient is bound to lose weight. After having determined the warehousing power of the system by the diet, carbohydrates in moderate amounts should be added. If we wish to know just how much starch we are giving our patient, probably the most satisfactory carbohydrate to give is white bread, for we know that 100 grams of white bread contains approximately 55 per cent. of starch. The patient may be allowed 25 grams of toasted white bread daily at first, and then have it slowly increased as his tolerance admits. In hospital work we have used the various gluten flours and aleuronat flour without very satisfactory results, owing to the unreliability of the preparations and the fact that the patients tire quickly of the breads and biscuits made from them. If a patient be allowed a little toasted white bread daily, his great craving for carbohydrates will be largely satisfied, for it is the bread that the diabetic feels the deprivation of more than anything else.

I always give my diabetics a printed diet-list arranged according to von Noorden's tables, as given in his article on "Diabetes Mellitus" in Vol. II of the *Twentieth Century Practice of Medicine*. As you will see from the copy which I pass around there are four diet tables. Group I contains only albuminous foods, of which there is a great variety for the patient to choose from. Group II contains foods with small percentages of carbohydrates. Group III contains foods with somewhat larger quantities of carbohydrates. Group IV contains a list of particularly valuable foods, owing to the very high percentage of albumens and fats they contain. One thing I wish to emphasize is that we should see that our diabetics are given plenty of fats to eat. Owing to the cutting off of the carbohydrates the great heat-producing constituent of the food is eliminated. The individual must be provided with sufficient calorics (35 for every kilo bodyweight), and this is best accomplished by giving fats, such as butter, gravies, etc., which have a high caloric value.

No two cases of diabetes mellitus can be treated alike. The obese diabetic of middle and advanced age should, of course, be watched, but the disease in these individuals is practically always of a mild type, and the patients may be allowed fairly liberal quantities of carbohydrates. In any given case one of the factors that must be most carefully observed is the weight of the patient from week to week. Very often a diabetic will put on weight and feel much more comfortable if allowed moderate amounts of carbohydrates, although he is still excreting fair amounts of sugar. Such a patient must be considered doing better, as I have already said, than the individual who is on a strict non-carbohydrate diet and who is not excreting sugar, but who is losing weight.

Of one form of carbohydrates I would like to say a few words about, and that is of potato starch. Mossé[7] in 1902 published a series of interesting papers in the *Revue de Médecine* advocating the use of potatoes in the treatment of diabetes mellitus. As a result of a series of feeding experiments on diabetics he found that the patients could tolerate from two and one-half to three times as much potatoes, weighed raw, as they could of white-wheat bread. White bread, as you will recall, contains about 55 per cent. of starch, whereas potatoes contain only from 16 to 24 per cent. In his experiments usually from 1 to 1½ kilograms or from 2⅕ to 3 pounds of potatoes were substituted for every 350 to 500 grams of bread, and he always found that there was a definite drop in the curve representing the sugar and urine excretion while the individual was on the potato starch. He found also there was always a marked amelioration in the patient's symptoms. Thirst became less marked, neuralgias disappeared, and strength increased. He also found that after the potatoes had been substituted for bread for several days, and then the patient placed on the original amount of bread, the excretion of sugar while on the latter never reached the limit obtained previous to the potato *régime*. In other words, a certain tolerance for wheat starch was produced by the potato *régime*. I may say that we have tried the potato treatment in a number of cases at the Johns Hopkins Hospital and can, in a general way, substantiate Mossé's results. It does appear, then, that potato starch is more easily assimilated than bread starch, and I cannot help but believe that there is decided benefit derived from the administration of potato starch in substitution for wheat starch in the treatment of diabetics. The potatoes are weighed raw and are best prepared by baking.

One other point in the treatment of diabetes I wish to emphasize, and that is the necessity, in manifestly severe cases, of having your patient provide you with a specimen of his urine, if not weekly, at least every two weeks, for the purpose of determining the earliest possible appearance in the urine of the abnormal acid which precedes the development of diabetic coma. This complication is now universally accepted as being due to an acid intoxication. The essential cause is the production in the system of beta-oxybutyric acid, held by most observers to be derived from the breaking down of the tissue albumens, and possibly also the body fats. Magnus Levy supports rather strongly the latter view. Beta-oxybutyric acid in itself is rather difficult to test for, but its derivative products, diacetic acid and acetone, are readily detected in the urine, the former by Gerhard's ferric-chloride test and the latter by the sodium-nitroprusside test. The appearance of the Burgundy-red reaction of diacetic acid should always be considered a danger signal, and the patient should be started on the alkaline treatment immediately, and by slight changes in the diet the acid will in many instances disappear from the urine. By the early recognition of the appearance of diacetic acid in the urine, which always means that its antecedent, beta-oxybutyric, is also being formed in the system, the development of diabetic coma can be frequently warded off. Once the individual, however, has become deeply comatose the treatment is very unsatisfactory. In the severe cases of diabetes where coma manifestations make their appearance, such as headaches, restlessness, acetone odor to the breath, commencing Küssmaul's "air hunger," and the appearance of large quantities of acetone and diacetic acid in the urine, very active treatment is necessary. The patient should be given very large quantities of sodium bicarbonate by mouth and by rectum. These should be pushed until the urine is alkaline in reaction. We will then be sure that the effect of the beta-oxybutyric acid in the blood has been neutralized. Subcutaneous infusions of normal saline solution may be used, but in our hospital experience have not given very satisfactory results. Where the coma has become decidedly deep it is necessary to get the alkali into the circulating blood more rapidly than is possbile by administering it by mouth or by rectum. This can be accomplished by giving an intravenous injection of a 1 to 2 per cent. solution of sodium bicarbonate in normal salt solution, from 500 to 1000 c. c.: of the solution being used. The fluid must be allowed to run in very slowly, otherwise the action of the heart may become seriously embarrassed. There have been only three or four recorded cases of diabetics who have been in deep coma who have been revived in this or in any other way. The prevention of the coma is what we should seek to accomplish, and this can only be done by early recognizing the appearance of beta-oxybutyric acid and its products in the urine and by the early commencement of good-sized doses of sodium bicarbonate or sodium carbonate.

I have been able to do nothing more than to merely touch on the treatment of diabetes mellitus. I have simply outlined the course that should be followed, The various therapeutic remedies which have been advocated I have not been able to even mention. The pancreatic extracts which have been prepared in the hope of providing the system with a glycolitic ferment have up to the present proved unsuccessful. It is to be hoped, however, that the more thorough knowledge which the study of the pathology and the metabolism of the disease has afforded will before long give us some remedy that will enable us to more successfully cope with the disease than we have been able to in the past. The treatment of the various complications other than that of diabetic coma I have not been able to touch upon, owing to lack of time at my disposal.

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DISINFECTIONS FOR DIPHTHERIA AND SCARLET FEVER IN BALTIMORE, WITH AN ACCOUNT OF REINFECTIONS.

By Wilbur P. Stubbs, M.D.,

Inspector of Throats, Baltimore City Health Department.

ALL cases of diphtheria occurring in Baltimore city are required by law to be reported to the Health Department. When such a case is reported the premises are immediately placarded "Diphtheria," which placard remains on the house until convalescence is reported by the attending physician, and the throat cultures taken from all the inmates of the infected house are declared by the Health Department to be free from the presence of diphtheria bacilli. In case the patient dies, negative cultures must be secured from all the other inmates of the house before the premises are declared free from infection, the placard removed, and the premises disinfected. All inmates of a house placarded "Diphtheria" are supposed to be under quarantine. The children cannot attend public or Sunday schools, and adults are expected to mingle with the public only so much as is absolutely necessary for their livelihood.

These throat cultures from convalescent diphtheria patients before fumigation may be taken by the physician in charge of the case, or upon request the Department will perform the duty.

Last year in all 874 cultures were taken by attending physicians, as compared with 3775 taken by me as throat inspector.

The following tables show the number of cultures taken each month and the results of same. Table I shows the cultures taken by attending physicians: Table II shows the cultures taken by the Department:

TABLE I.

Cultures taken by Physicians in 1903.

	Positive.	Negative.	Total.
January	18	37	55
February	15	60	75
March	13	31	44
April	29	90	119
May	21	53	74
June	3	21	24
July	7	31	38
August	6	29	35
September	15	51	66
October	28	104	132
November	15	87	102
December	27	83	110
Total	197	677	874

TABLE II.

Cultures taken by Throat Inspector in 1903.

	Negative.	Positive.	Total.	Houses visited.
January	194	3	197	82
February	195	17	212	84
March	166	19	185	64
April	216	2	218	87
May	212	6	218	90
June	112	5	117	50
July	246	17	263	63
August	289	10	299	85
September	433	44	477	83
October	553	19	572	162
November	493	8	501	153
December	492	24	516	149
Total	3601	174	3775	1152

TABLE III.

Combined table, showing total number of cultures taken during 1903 for fumigations.

	Negative.	Positive.	Total.
Taken by physicians	677	197	874
Taken by throat inspector	3601	174	3775
Total	4278	371	4649

The striking difference in the percentage of positive cultures taken by the attending physicians over those taken by the Department is due to the fact that in a large majority of cases the attending physician takes a culture *only* from the throat of the patient, with the request that if that culture is found free from diphtheria bacilli the Department will take the other cultures. So in a large majority of the cases the Department only takes cultures *after* the patient's throat is free from infection. Hence the much smaller per cent. of positive cultures.

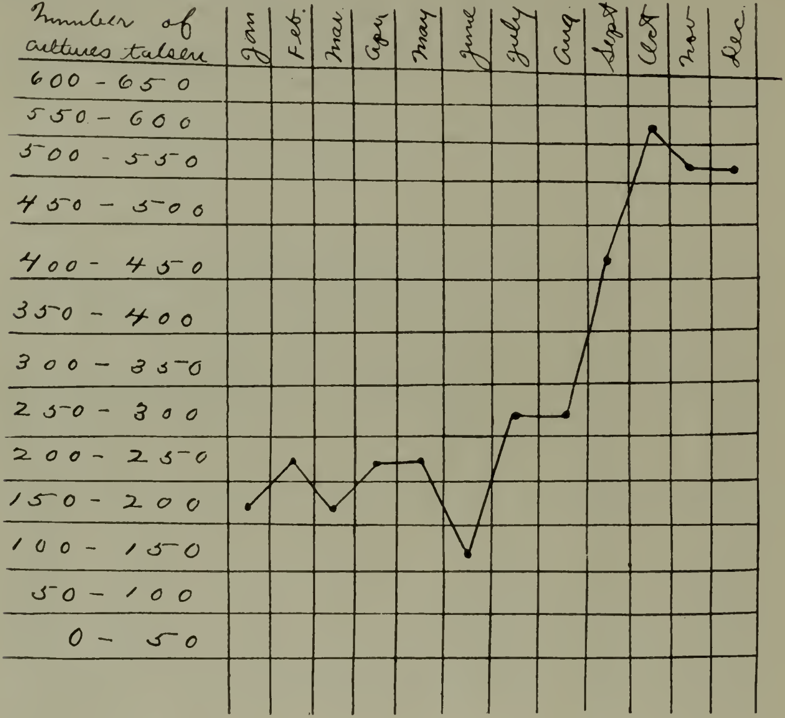
The following table shows the work of this year as compared with that of 1902:

	1902.	1903.
Number of cultures taken	1905	4649
Number of cultures (positive)	97	371
Number of cultures (negative)	1808	4278
Number of houses visited	782	1151
Number of positive cultures without showing clinical diphtheria	36	175

This shows about two and one-half times as many cultures taken in 1903 as in 1902, or the enormous net increase over last year of nearly 150 per cent.

It is a recognized fact that diphtheria is more prevalent during the autumn and winter months, and my experience of last year entirely bears this out, as the following chart will show at a glance. The largest number of cultures were taken during October, November, and December, while the smallest number were taken during the summer months. The public schools, opening in September, are undoubtedly the main factors in bringing about this relation.

When negative cultures are secured from all the inmates of a house infected with diphtheria, the infected rooms are disinfected by means of formaldehyde gas, and in order to render this disinfection more secure, test cultures are placed in the rooms and returned to the Health Department by mail after fumigation. If these test cultures show that all the germs have been destroyed, the disinfection is considered effective. If, however, these test cultures are found to contain germs, the fumigator repeats his work until a negative culture is obtained. I think the small percentage of houses reinfected—*i. e.*, a second case occurring after fumigation—will show that the disinfections are, as a rule, effective.



For the sake of comparison I have also included scarlet-fever reinfections in the following table:

	Scarlet fever.	Diphtheria.
Number of disinfections for 1903	957	1168
Number of reinfections	18	34
Percentage of reinfections	1.8%	2.9%
Control cultures (positive in reinfections)	1	6
Control cultures (negative in reinfections)	14	23
Control cultures (missing or empty in reinfections)	3	5

In those cases in the above table where the first control culture was positive (six in diphtheria and one in scarlet fever) we can possibly account for a reinfection. In five of the diphtheria cases of reinfection and in three of the scarlet-fever cases, where the control cultures were either not sent back to the Department or were sent back empty, we might account for the reinfection on the supposition that the cultures would have been positive had we been able to examine them. The remainder of the reinfections are more difficult to account for. Of the 26 diphtheria reinfections, six occurred within one week after disinfection, nine within two weeks, five within one month, one within three months, and two within six months. I think that the reinfections occurring three months after disinfection may possibly bear no relation to the primary case This we cannot say positively, as Osler reports a case where virulent diphtheria bacilli were found on a child's toys five months after an attack of diphtheria, and experimentally diphtheria bacilli have been kept alive on a piece of silk thread for 172 days.

The cases of reinfection occurring anywhere under one month after the room was disinfected certainly appear to be dependent on the original infection. We can readily see how this may happen even with the most thorough fumigation. Bits of membrane coughed up may be deposited on the nurse's clothing, and, unless she confine herself strictly to the infected room, may be accidentally wiped off on furniture in another part of the house. Here we have another source of contagion. Again, I have often seen a convalescing patient with a throat full of virulent diphtheria bacilli allowed the liberty of the house, so that he may distribute live diphtheria bacilli from cellar to garret. As we do not disinfect the entire house, we should not be surprised to see another case develop within a short time under such circumstances. Neither can we compel the patient to stay in one room until we declare his throat free from infection. We can only quarantine the house as a whole. So, taking into consideration these obstacles to ideal disinfection, the small proportions of 2.9 per cent. of reinfections in diphtheria and 1.8 per cent. of reinfections in scarlet fever are no more than we should reasonably expect, and will, I am sure, compare favorably with the reinfections from these two diseases in other cities.

The scarlet-fever reinfections give a somewhat different picture. Of the 14 scarlet-fever reinfections showing negative cultures, one occurred within one week, one within two weeks, seven within one month, four within three months, and one within six months. We see the length of time before reinfections to be greater here than in diphtheria, and this should not surprise us for several reasons. First, the period of incubation is, as a rule, longer in scarlet fever than in diphtheria; second, we have the more important point of the period of infectiousness. This we know is, on the average, about six weeks, but when otitis, rhinitis, or suppurating glands complicate or succeed the primary attack the infective period may be much more prolonged. Hence we find over 78 per cent. of the reinfections occurring in from one to three months after the primary case. In fact, there is ground for the supposition that in the reinfections occurring in one week after fumigation the patient was exposed to the same source of contagion as was the primary case.

Last September one of the children at the Fresh Air Lodge, situated near Belair, Md., was brought to Baltimore complaining of a sore throat. · Upon examination it was discovered that she was suffering with diphtheria. I immediately went to the Lodge and took cultures of all the inmates. Fifty-one cultures were taken in all, seven of which contained diphtheria bacilli. On the next day

(September 4) I returned to the Lodge and injected antitoxin. All the children who showed positive cultures received 2000 units with one exception. One child who had developed a slight membrane received 3000 units. The others received 1000 units each. All of these children were isolated, the Lodge put under quarantine, and an antiseptic gargle prescribed. On September 9 I made a third trip. All the inmates were again examined. No membrane or other suspicious sign or symptoms were observed. The temperatures were all normal. The isolation of the children showing a positive culture was continued, and I found all other prophylactic measures being rigidly observed. No further trouble was met with, and after securing negative cultures from all the throats the quarantine was lifted on September 14 and the children allowed to return to Baltimore.

I could only find one probable source of infection for the outbreak which occurred at this camp. This was either through the milk supply or by direct contact with the milkman who supplied the camp with milk. This man had been in contact with a case of diphtheria in Belair, and I secured a positive culture from his throat. Whether there was any connection between these two cases it is impossible to say, but the circumstances were, to say the least, very suspicious. I think these prompt measures prevented a spread of diphtheria at the camp and in Baltimore, where an outbreak would in all probability have occurred had seven children with positive cultures been allowed to return to this city without restrictions.

In conclusion, I think the above report shows:

1. The enormous increase in the work of the throat inspection.
2. The great importance of throat inspection.
3. The importance of thorough disinfection.
4. That our disinfections are, as a rule, effective, as shown by the small per cent. of reinfections.
5. That although the identity of the scarlet-fever organism has not been definitely settled (though Mallory has almost proven it to be a protozoan), it would seem to be even less resistant to formaldehyde than diphtheria bacillus, as shown by a smaller percentage of reinfections.

Two obstacles have always been in the way of the progress of medicine—authorities and systems. Authorities may be referred to for certain observations and thoughts, but the self-conscious man follows them only when they (the authorities) offer him a guarantee of their ability to observe and think properly, and even then only so long as their observations and ideas do not conflict with his own observations and ideas. All authority must, therefore, be a relative one only. It *may guide* our observation and judgment; it must never dictate them. * * * His own (the physician's) senses and thoughts must be his supreme, highest, authorities.—*Virchow.*

Current Literature.

REVIEW IN MEDICINE.

Under the Supervision of Thomas R. Brown, M.D., Baltimore.

THE BACILLUS DYSENTERIAE IN ASYLUM DYSENTERY.

Eyre (*British Medical Journal*, April 30, 1904) contributes an article of both interest and value in its bacteriological investigations of an epidemic of dysentery in one of the London county asylums. After giving briefly the clinical history of the epidemic, in which 24 cases were met with, he discusses at some length his method of examining the feces. As a bacteriological medium he made use of an especially modified "lakmus-lactose-nutrose agar," this medium being originally recommended by Drigalski and Conradi.

Bacteriological examination of the feces was made in all cases, while a bacteriological examination of the blood and of the bile was also made in all the cases that succumbed—six in all. From six of the 18 cases the bacillus dysenteriae was isolated, and this bacillus was strictly comparable to Shiga's bacillus obtained from Berlin and Philadelphia; further it was agglutinated at once in dilution of 1 to 200 by the antidysenteric serum (Shiga).

The conclusions at which Eyre arrives are as follows:

1. That a bacillus identical with the bacillus dysenteriae, described by Shiga as the specific cause of acute dysentery in Japan, can be isolated from the stools of many cases of asylum dysentery.

2. That the blood serum of some of these cases of asylum dysentery possesses a specific agglutinative action when tested against bacillus dysenteriae isolated from the stools of other similar cases, and also against other strains of bacillus dysenteriae isolated from cases of dysentery in tropical countries.

3. That in order to detect the presence of bacillus dysenteriae the stools must be examined when fresh.

4. That post-mortem material must be collected and examined as soon after death as possible, as after a few hours' delay, even in quite acute cases, bacillus coli becomes the predominant microorganism in the intestinal canal.

5. That under these conditions (3 and 4) the isolation of bacillus dysenteriae from the stools of patients suffering from acute asylum dysentery is comparatively easy by the methods indicated—when these stools are typically dysenteric to the naked eye.

6. That in case of chronic asylum dysentery, bacillus dysenteriae, if present, is so outnumbered by bacillus coli and other intestinal saprophytes as to render its isolation a matter of extreme difficulty.

PHYSIOLOGICAL OR FUNCTIONAL ALBUMINURIA.

The intensely interesting subject of the (so-called) physiological albuminuria is discussed in a short though interesting paper by West (*Lancet*, January 16, 1904).

In the first place, West divides and subdivides the various forms of albuminuria as follows:

a. Cis- or pre-renal, subdivided into (1) cause obvious, as heart disease, fevers, etc., and (2) cause not obvious, *i. e.*, physiological or functional.

b. Renal, subdivided into (1) obvious renal disease, and (2) no obvious renal disease, *i. e.*, physiological or functional.

c. Citra- or post-renal, *i. e.*, accidental, from urinary or genital passages, etc.

Thus, according to West, albuminuria is physiological when its cause is not obvious, but, as everyone knows, to regard any albuminuria in the strict sense as physiological is opposed violently by many clinicians. As West says, in physiological albuminuria every care has been taken to determine the cause, but without success; but it does not follow that because a cause has not been found no cause exists, and for this reason other names have been suggested for the condition, such as intermittent, postural, cyclical, and dietetic, but all the terms so far suggested are open to question.

West, to determine the frequency of this condition, had a long series of observations made at various times of the day and under varying conditions upon apparently normal individuals, and he found that 42 per cent. at some time or another showed a trace of albumen in their urine. The figures usually given, however, vary from 1 to 10 per cent.

Of West's 40 per cent., half showed only minute traces of nucleo-albumen. In half of these latter cases, however, the amount was so small that it could not be detected by the ordinary tests, while in the remaining half, *i. e.*, in 10 per cent. of all the cases tested, the serum albumen could be detected by the ordinary tests.

West then discusses numerous interesting questions suggested by these findings, such as the fact that albuminuria is intermittent, occasional or cyclical is no proof that the kidneys are sound; the fact that in granular kidney, as well as in funcitonal albuminuria, the quantity of albumen may be tiny; the fact that the clinical importance of the albuminuria varies greatly with the age of the individual—for instance, the frequency of a mild albuminuria in newborn infants without obvious cause.

West sums up his conclusions in regard to the whole matter as follows:

1. Albuminuria may occur as a transitory symptom in persons who, except for this symptom, may be judged to be perfectly healthy, for they appear to be so at the time, and remain so.
2. But it may also occur in persons who, though they appear at the time to be healthy, develop signs of disease subsequently.

3. It is difficult to distinguish at a given time between those who will remain well and those who will not.

4. It is difficult to exclude with certainty many of the pathological causes to which the albumen might be due. In other words, though there may be no proof that these causes are present, there is equally no proof that they are absent, and in some cases the results show that they were not absent.

5. Speaking generally, the larger the amount of albumen in the urine, and the longer it persists, the greater the probability of some permanent disease.

6. Continued observation of these cases shows that the so-called physiological albuminuria does very appreciably increase the risk of life, and that this risk grows rapidly with every year of age after 30 years.

Thus West concludes that functional albuminuria is never, strictly speaking, physiological at all, but that it is, on the contary, always pathological, though not necessarily renal.

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OSTEOMALACIA.

Talbott (*Journal American Medical Association*, July 23, 1904) furnishes an interesting article on the pathology of osteomalacia. He first discusses the method of bone formation, and then calls attention to the fact that osteomalacia, anatomically speaking, consists of osteitis and periosteitis. After going at length into the causes of the condition, and calling attention to the fact that everything is in favor of the condition being due to some form of autointoxication, Talbott concludes as follows:

1. Osteomalacia may and does exist for years in pelvic and other bones before the symptoms can possibly be recognized by the physician or surgeon.

2. The object of this paper is to show that osteomalacia can be studied earliest in the alveolar process.

3. The alveolar process is the most transitory structure in the body. It develops twice and is absorbed thrice if the second set of teeth are shed. The evolution of the face, whereby the jaws are decreasing in size, with the many complications thereon resultant, renders the jaws and alveolar processes increasingly transitory.

4. In the evolution from the lowest vertebrates up there has been a continuous succession of teeth (polyphyodont), as found in some selachians, a partial succession as in some mammals, and a comparatively permanent set of teeth as in man. This shedding of teeth, due to a process called senile absorption, atavistic in type, takes place in everyone to a greater or less extent after 45 years of age. Should man live in a a comparatively healthy state long enough he would lose all teeth from this process.

5. Degenerate children from precocity, due to arrested development at the senile or simian period of intrauterine life, may show symptoms of this disease in connection with the first set of teeth at from 6 to 10 years of age. A monkey which died of tuberculosis

at one year had osteomalacia, which exposed the roots of all the temporary teeth, while three had dropped out.

6. Constitutional causes, like auto-intoxication and drug poisoning, may be potent in this particular.

7. The effect of auto-intoxication and drug poisoning is first irritation through blood-streams, often causing endarteritis obliterans. Since the arteries are terminal, irritation readily causes inflammation and halisteresis.

8. Osteomalacia is as common among wild animals in captivity as in domestic animals.

9. The influence of bacteria as a cause has not been demonstrated by Koch's law.

10. If due to auto-intoxication, the effete matter should be removed from the system.

11. Osteomalacia or senile atrophy is the basic explanation of interstitial gingivitis or so-called pyorrhea alveolaris. Will not the same reasoning hold true of osteomalacia of the bones of other parts of the body?

REVIEW IN SURGERY.

Under the Supervision of Hugh H. Young, M.D., of Baltimore, Assisted by J. W. Churchman, M.D.

The Treatment of the Peritoneum in Diffuse Peritonitis.

Joseph A. Blake. *Annals of Surgery,* August, 1903.

Dr. Blake opens his contribution to this interesting subject with a clinical classification, and refers to the superiority, from the standpoint of therapy, of such a division over one based on the specific nature of the bacterial invasion. (It will not do, in passing, to insist too strongly on this superiority. Gonorrheal peritonitis, for example, is a different disease from streptococcic peritonitis, and both treatment and prognosis are influenced here as much by the nature of the organism as by the extent of involvement.) Peritonitis cases are, then, divided into: 1. Those with abscess, the pus being localized by adhesions; 2. Those with spreading peritonitis, in which there is no limitation by adhesions or gravitation, but in which the limits are ascertainable; 3. Cases of general peritonitis in which no portion (except possibly the lesser sac) is uninvolved. It is his operative results on patients, with the condition classified in this way, that Dr. Blake here reports. The treatment adopted has aimed at two things—first, prompt removal of the cause to prevent further peritoneal and systemic infection, and second, placing the peritoneum under the best possible conditions to withstand and eliminate the general infection. The first principle means practically early operation, and Dr. Blake makes the very sane remark that a spreading peritonitis from an appendix differs in no way from a peritonitis from any other cause, and cannot possibly be arrested or localized by any form of treatment other than operation. This brings the author to the threadbare appendix question, but he treats it concisely and sagely. "The advocates of the treatment by rest," he says, "will concede that the patient would be much better off with the appendix out if that could be done without operation. With a short anesthesia and quick operation the dangers of interference is much less than that of procrastination. The proper time for the rest treatment is when the appendix is out and the peritoneum cleansed."

Dr. Blake has treated the peritoneum in these cases by cleansing with large quantities of salt solution poured in, and either left in or mopped out with sponges. As to drainage, the author, at first an advocate of abundant drainage, has come now to employ it (in cases where the focal cause or origin can be removed or eliminated) only when the presence of hemorrhage or necrotic tissue demanded it. The occurrence of post-operative obstruction, the shortening of convalescence, and the impossibility of draining every portion of the cavity are Dr. Blake's reasons for omitting drainage. He also finds that the duration of septic absorption—as indicated by the continuance of a supernormal temperature—is markedly less in undrained than in drained cases. In patients with general peritonitis, when the origin cannot be removed or eliminated (as, for instance, those resulting from rupture of abscesses or from pancreatitis), Dr. Blake thinks drainage, as a rule, necessary.

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PRIMARY SARCOMA OF THE SPLEEN AND ITS TREATMENT BY SPLENECTOMY. William Jepson and Frederick Albert. *Annals of Surgery*, July, 1904.

The authors open their article with the report of a case treated at the State University Hospital of Iowa. The patient, a girl of 15, with negative family and previous history, had been suffering for about five months from an enlargement in the left hypochondrium, particularly noticeable upon standing or lying on the right side. The mass had been gradually increasing in size, but, apart from a slight dragging sensation after walking, had caused no symptoms. The appearance was that of perfect health, blood examination and urinalysis were negative, and physical examination showed nothing except the splenic tumor. This appeared as a fullness in the left hypochondrium, which reached, with the patient on her right side, two inches below the umbilicus. It was not influenced by diaphragmatic movement, and the colon was found, by percussion, to pass over the lower part of the growth. The mass was elongated, had more or less definite edges above, but no splenic fissure. Operation was performed through incision along the outer border of the left rectus, joined by a second incision at right angles to it. The pedicle of the spleen (the gastro-splenic ligament), containing all the splenic vessels but one, was ligated and the spleen removed. Recovery was uneventful. The patient left the hospital on the twenty-ninth day, and seven months after operation was still in perfect health. The blood, which was practically normal on admission, showed an anemia and marked leucocytosis after operation, the latter feature persisting (24 days after operation, leucocytes 23,220; seven months after operation, leucocytes 10,810). Some poikilocytes, microcytes, macrocytes, and nucleated reds were present. The tumor was found to be, by microscopical examination, a round and spindle-cell sarcoma.

That the spleen is not an indispensable organ the statistics of splenectomy prove. Of 274 cases of extirpation collected by Van Verts, 170 recovered, while Hagan collected a series of 360, with a mortality-rate of only 38.3 per cent.

The spleen seems to possess a relative immunity to secondary involvement by new growth, and the existence of primary malignant neoplasm of the spleen has been doubted. Leiten says that "primary sarcoma of the spleen is very rare." Mosler in 1875 knew of no case, but Grohe, in *Virchow's Archivs* (1897), writes: "Of heteroplastic tumors of the spleen only a few cases are known. Primary sarcoma appears more than doubtful." Weichselbaum was the first to report cases of primary splenic sarcoma (if we exclude Friedreich's "Multiple Nodular Hyperplasia of the Liver and Spleen," believed by Bunting to have been a primary sarcoma of the spleen). He described two cases in *Virchow's Archivs* (1881). Since then 29 such cases have been reported, making in all 32 cases of so-called primary splenic malignant neoplasm, though the diagnosis was not clear in all these cases. Of these cases splenectomy was done on 11 patients. Three died following the operation (patients of Hothmann, Collins, and Krylow). Of the eight surviving cases, three (those of Billroth, Jordan, and Kocher) died of recurrence. Two of the four remaining cases have been free from recurrence—Fritch's patient for six and one-half years and Wagner's for four years. The other two cases (Garré's and the authors') are too recent to be reported on, though both are, at the end of several months, free from all sign of recurrence. The extirpation of the sarcomatous spleen is therefore a successful procedure.

The early diagnosis of splenic sarcoma—as desirable here as in the case of any malignant neoplasm—offers great difficulties on account of the meagerness of symptoms. The enlargement is difficult to recognize in the early stage because of the protected position of the spleen. Later, when the presence of enlargement is obvious, its nature must be determined. If it is uniform, and if the normal shape of the spleen is maintained, primary neoplasm may be excluded. If, on the other hand, rodosities are present (cysts and abscess having been excluded, if possible, by palpation, percussion, aspiration [?] or exploratory incision), we can only say that we have to do with a solid neoplasm. Whether this is fibroma, angioma, lymphangioma or sarcoma, it will usually be impossible to determine previous to exploratory inspection. Pain is often absent, and if present may be misinterpreted owing to the proximity of the spleen to the stomach and left kidney. Blood examination seems to have no diagnostic value.

As to treatment, no question can exist about the advisability (in the absence of metastasis) of splenectomy.

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SECONDARY ABDOMINAL OPERATIONS. Lewis S. McMurtry. *Journal of the American Medical Association*, July 30, 1904.

The relatively recent advances of what we are now accustomed to speak of as "modern surgery" have done away with complications and accidents that formerly obtained with frequency, and have, besides, lowered mortality and made more difficult operations possible. Secondary operations, however, are still necessary. They form a class by themselves, presenting special and exceptional difficulties, and often terminating in failure:

1. *Hernia.*—Suppuration of the incision after laparotomy is the most common cause of the ventral form. Fifteen years ago 10 per cent. of abdominal sections suffered from ventral hernia three years after operation, but improved technique has greatly diminished this ratio. A less general use of drainage has also diminished the frequency of hernia.

2. *Fistula.*—This is particularly serious and distressing in suprapubic section and vaginal operations. Fortunately, intestinal fistulae, which are so frequent, usually close spontaneously.

3. *Sinus.*—This usually is due to the presence of some foreign body, in most cases a stitch, and the gradually increasing use of catgut in preference to silk is diminishing the frequency of this occurrence.

4. *Secondary Suppurating Foci.*—These are usually the result of incomplete operations in inflammatory conditions where adhesions divide the suppurative area into multiple pockets, or in suppurating cases wherein the drainage tract becomes obstructed by adhesions, leaving an infected area closed without an outlet. The most frequent site of multiple suppurative foci is about the caput coli in suppurative appendicitis.

5. *Adhesions.*—These were quite common in the early days when peritonitis was treated by extensive lavage, with elaborate sponging and mopping. Omental adhesions, with traction on the stomach, and intestinal adhesions, causing pain and obstruction, are most distressing relics of successful operation, occur with some frequency, and are often difficult to treat. Many of them are inevitable, but there seems little question that a large proportion were due to injury done to the peritoneal epithelium by excessive lavage and other treatment. Sequestration of the peritoneum by broad layers of gauze and limitation of traumatism, and the peritoneal toilette to the immediate pathologic area have diminished the frequency of adhesions, as has also the use of normal salt solution.

6. *Foreign Bodies.*—Gauzes, sponges, and pads are nowadays so carefully marked and counted that the danger of leaving them

in the abdomen is less than it formerly was. Still, the possibility of such an occurrence should be kept in mind if untoward symptoms occur during convalescence.

7. *Vaginal Operations.*—Since the visit of Jacobs and Segond to this country and the introduction of French methods in the treatment of pelvic inflammatory disease there has been a good deal of enthusiasm over the vaginal route, and many have adopted it entirely. It is impossible, however, in this way to deal with the diseased structures by sight, and many secondary operations have been necessitated. Vaginal drainage is a valuable procedure in septic patients, but it does not usually effect a complete cure, and an abdominal operation is later necessary in many of the cases.

8. *Conservative Operations.*—In the reaction which has come about against the early excess in pelvic surgery there is now a danger that conservatism will be overdone and diseased tissues will be left in or only partially removed and trusting to nature to do the rest. Such cases always come to a second operation.

9. *Neurotic Cases.*—These patients, usually suffering from persistent pelvic pain and dysmenorrhea, are introduced to surgical treatment with cervical dilatation and uterine curettage. Again they seek surgical treatment, and are pleased to have the appendages removed. Later they are apt to have a hysterectomy. Always improved temporarily by an operation, but never cured, they go their way. To operate on this class of neurotic patients without demonstrable lesions is a misapplication of surgery, and should not be done, even for the so-called moral effect, which, at best, is rarely more than a temporary impression.

REVIEW IN NEUROLOGY.

Under the Supervision of Robert Reuling, M.D., Baltimore.

THYROIDECTOMY FOR EXOPHTHALMIC GOITER. James Marsh Jackson. *Boston Medical and Surgical Journal*, Vol. CL, No. 7, February 18, 1904.

This case is of special interest, as it illustrates the marked improvement which occasionally occurs after removal of a portion of the thyroid gland in exophthalmic goiter. The patient had been under medical treatment in the out-patient department of the Massachusetts General Hospital since October 2, 1901, without material benefit. (The author here states "she is not iucluded in the series of cases treated by bromide of quinine.")

The prominent symptoms before operation were exophthalmos, large goiter of both lobes (especially the left), tachycardia 140, tremor, sweating, diarrhea (four or eight movements a day), nervousness, irritability of temper, hoarseness, and inability to stay in a hot room.

Examination at that time showed marked prominence of the eyes, but no Stellwag sign. Von Graefe's sign was present. She was able to wrinkle the forehead slightly, and convergence of the eyes was normal. Examination of the throat showed no paralysis of the recurrent laryngeal. The hands were moist and warm. There was marked sweating of the body and considerable tremor of the hands and tongue. The heart was enlarged slightly to the left. First sound at apex loud; second weak; no murmurs. The patient was unable to work, and was sent into the hospital for rest and treatment. Operation was performed by Professor Mikulicz on May 20, 1903. The left lobe of the thyroid and inferior thyroid arteries were tied, stopping completely the pulsation of the right lobe. For 10 days she ran a slight temperature, 99° to 101.5° F., and the pulse 130 and 140 at first, gradually diminishing, until the tenth day it was reduced to 68. No change in respiration noted. Recovery otherwise uneventful. Since operation the following changes have occurred: In the first place, the patient feels much better, and has been able to work continuously since leaving the hospital: the pulse-rate, according to the records of the out-patient department, has never been above 84, whereas formerly before the operation it rarely was under 130; the heart has diminished in size and is now normal.

Eyes: Patient thinks that her eyes were much less prominent after operation. Von Graefe's sign is now absent. Tremor less marked, but still present. She has gained 13¾ pounds since operation, and has no diarrhea. Sweating since operation is still very marked. Irritability of temper decidedly worse since operation. She sleeps well. Headache has been more marked. Hoarseness remains the same. Polyuria has been a marked symptom from the beginning, and no change was effected by operation. Of late patient has noticed that the right lobe of the thyroid has been increasing in size, and that the eyes are becoming more prominent. She says, also, that the cough, which has been absent since May, has again returned, and is about the same as prior to the operation. In conclusion, the author draws attention to the marked improvement which has taken place in her general condition and the particular symptoms of exophthalmos, pulse-rate, tremor, diarrhea, insomnia, and cough, whereas the following symptoms are either not improved or slightly worse: perspiration, irritability of temper, headache, hoarseness, and polyuria.

* * *

THE PREVENTION OF TETANUS. Daniel N. Eisendrath. *Journal of the American Medical Association,* Vol. XLII, No. 20.

The author points out that it has been shown experimentally that the pathogenicity of the tetanus bacillus is increased by irregular wounds where there is more or less necrosis, or in the presence of a hematoma, especially if a foreign body be present. For instance, in the case of pitchfork wounds their danger is easily explained if we remember that the tetanus bacillus is found under normal conditions in the intestine of horses, and that the spores are present in horse dung, manured gardens, street dirt, and poorly-built wells. It has been amply shown that the blank cartridge itself does not contain tetanus bacilli. In the exhaustive article on "Fourth of July Casualties," published in the *Journal of the American Medical Association*, August 29, 1903, five investigators are quoted who have examined 759 blank cartridges bacteriologically without finding tetanus bacilli in one. The author believes that if a punctured wound which has been inoculated with tetanus bacilli be treated sufficiently early by methods which are based on the knowledge of the bacteriology of the disease we can absolutely prevent the development of tetanus in every case. "The tetanus bacillus, I need hardly tell you, is an aerobic organism, and is surrounded by ideal conditions for its growth in punctured wounds. After the foreign body, whatever it may be, has penetrated the skin and underlying soft parts, the edges of the wound of entrance are rapidly closed by wound secretion, and we have a closed cavity, as I have been able to demonstrate on a number of occasions, devoid of oxygen, and an ideal place for the development of the tetanus bacillus. When we consider that human beings, mice, and guinea-pigs are exquisitely sensitive to the toxins of tetanus, and that it requires only 1-100,000 to 1-10,000,000 of a cubic centimeter of tetanus toxin to kill a mouse, we can readily understand how a few tetanus bacilli can produce the necessary amount of havoc within a comparatively short space of time."

According to Bruner, the incubation period was one to five days; nine cases died and one recovered. When the period of incubation was 5 to 10 days, 18 died and 8 recovered; when it was 10 to 20 days, nine died and six recovered. In regard to the prospects of recovery after the development of tetanus, one need only to bear in mind the large percentage of deaths, even after the use of antitoxin and medicinal remedies.

Ullrich has lately collected 19 cases in which Behring tetanus antitoxin was injected between the second and fifth days. Of the 19, nine, or 47.3 per cent., recovered, and 10, 52.6 per cent., died. Including 53 cases treated during the same period of the appearance of the symptoms by other antitoxins, there are 72 cases, of which 39 (53.8 per cent.) were healed and 33 died (45.5 per cent.). Twenty-three of these had an incubation period of 10 days. Of these, 16 were healed, 59.7 per cent., which verifies what he stated before, that the percentage of recoveries improve when the antitoxin is used late, because these are the milder cases. Of 15 cases collected by Ruprik, treated symptomatically with chloral, etc., 53 per cent. recovered. These were in all probability subacute cases.

The author's technique in treating cases consists in converting a closed wound filled with necrotic debris, blood-clots, and foreign bodies into an open one, so that there cannot be the least corner of it in which the bacilli can find a favorable condition for growth. The entire wound area should be swabbed with pure carbolic acid, followed immediately by the application of 96 per cent. alcohol and gauze wet with 1-1000 salicylic acid, and the extremity placed on a splint. No sutures should be employed. Immediately on getting patient to bed give 20 cubic centimeters of tetanus antitoxin. After-treatment consists in washing wound with 1-1000 salicylic-acid solution.

* * *

TWO CASES OF CRURAL MONOPLEGIA OF TRAUMATIC ORIGIN. J. J. Putnam. *Boston Medical and Surgical Journal,* Vol. CL, No. 18.

The first patient was an athletic young man who one month ago received a number of blows about his head during a sparring match. He remembers no blow in particular that seemed to have caused the mischief, but he was very exhausted after the contest, especially so as he was out of condition. The following day he was brought to the hospital, and he was then in a confused condition and remembered nothing that had occurred on the previous evening, but he soon improved and remembered several events. His left foot was entirely limp at the ankle, and could not be extended, although he could flex it; besides that, there seemed to be practically nothing the matter, except that he was very nervous. It was found that his knee-jerk was exaggerated on the right side, and he had at least a suspicion of an ankle clonus and also Babinski reflex on the same side. Sensation not affected. He felt very uncomfortable about his head and very nervous. After being in the hospital several days a plaster was put around the foot for support and he walked about. His foot certainly showed improvement after 48 hours. About a week later he came to the out-patient department and the foot was almost well. But he now discovered another symptom, and this is that he bumps into people on his right side, and on examination of his field of vision hemianopsia was found. Although the case seemed at first more or less hysterical in character, the author very rightly comes to the conclusion that, with the presence of the hemianopsia and clearing up of the nervous symptoms, the condition might be due to a small hemorrhage in the occipital lobe and another hemorrhage near the Rolandic fissure. In fact, he believes there may have been several capillary hemorrhages. He also suggests that such lesions are not so uncommon as we suppose, and they may be even more extensive than the paralysis indicates.

The second patient, a law student, was coaching a football team, and was tackling when he received a blow on his head from somebody's knee. He came to the ground at the moment and felt his leg limp, but only for a brief time, so that he got up and went on with the game. Two weeks later he was again struck on his head, and again his leg got limp, and he felt a tingling. After that he received in wrestling and on other occasions blows about the head, and on several occasions this tingling and weakness came in the leg. In November, after being much fatigued, he felt of a sudden his leg getting rigid and a sensation passing up the leg to the arm and the face. He was able to ask his friends to do certain things for him, but at the end of about two minutes he lost consciousness and was unconscious for 20 minutes. The same thing happened again about seven weeks ago. Now he has a condition of his right foot like that seen in the first case. There is no other sign of cerebral injury, but the paralysis is becoming rather more intense and perhaps more extensive. The knee-jerk is exaggerated, and there is a distinct ankle clonus.

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INTRASPINAL INJECTION OF LYSOL SOLUTION IN THE TREATMENT OF CEREBRO-SPINAL MENINGITIS, WITH A REPORT OF THREE CASES. Morris Manges. *The Medical News,* Vol. XLVIII, No. 20.

The author gives Leager the credit of first using lysol as an intraspinal injection in cerebro-spinal meningitis, his experience being based on a series of cases in the Lisbon epidemic.

The treatment consists of lumbar puncture and the withdrawal by aspiration of varying quantities of cerebro-spinal fluid from the spinal canal, frequently amounting to 50 cubic centimeters. "Artificial serum is then injected with the same syringe, the needle being left *in situ,* and the surrounding parts are washed with serum; lastly, a quantity (from 9 to 12 cubic centimeters) of a 1 per cent. solution of lysol is injected through the same instrument and the needle withdrawn. The temperature falls immediately, but rises again after one to three days, when the puncture and injections are repeated, and so on until only quite clear and limpid fluid is withdrawn after puncture, when the injection of lysol is stopped. Afterward a few punctures are made to see if the fluid continues clear." Leager calls attention to the painfulness of the treatment, which, however, in the experience of Manges in his three cases, was not the case.

Of the 31 cases in Lisbon which were treated with lysol 13 died—five from dilatation of the cerebral ventricles, two from pulmonary tuberculosis, one from edema of the glottis, one from purulent pneumonia, and four from the disease without complications. The 18 that recovered were completely cured.

In 20 cases simple puncture of the spinal canal was tried; nine died, and of the 11 who recovered one was deaf, one had persistent paralysis of the left arm, and four had bed sores. Then seven cases were treated with spinal puncture, removal of the fluid and an injection of oxycyanide of mercury. Of these seven cases four died and three were cured.

Of the three cases the author reports, the first was a meningococcus infection, the second a virulent streptococcus. He says: "While it must remain an open question whether the meningococcus case would have recovered without the treatment, since the sporadic cases in adults not infrequently do so, yet the fact remains that the patient was losing ground steadily in spite of the various treatments, including lumbar puncture, which were employed. After the first injection he seemed to hold his own, while following the second his recovery was rapid and uneventful.

"Of the second case I can speak with much more assurance, since at the Mount Sinai Hospital death has resulted in every case of cerebro-spinal meningitis in which the streptococcus was found in the fluid obtained by lumbar puncture. The condition of the child at the time the lumbar puncture and first lysol injection were made was so desperate that no one who saw the case expected him to survive the night, hence his complete recovery without any after-effects is all the more gratifying." It is to be noted that the washing out of the spinal canal with artificial serum was omitted in all of these. The injections were all made without anesthesia, except the first one in the child, which was done under slight chloroform narcosis. No pain and unpleasant after-effects were noted.

The case histories are given in the author's article, but want of space does not allow them to be reviewed here.

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PROLONGED HYSTERIA. S. Weir Mitchell. *Medical News,* Vol. LXXXIV, No. 24. Association of American Physicians' Report.

This case is a remarkable example of prolonged hysteria which has been under the author's observation since 1876. They went through a number of varied movements. One was a pendulum swing of his arm to and from the body some 150 times a minute. Later a rotary movement of the same arm developed, the hand being carried round the shoulder over 100 times a minute. Notwithstanding the apparently exhausting character of these movements, persistently carried on during his waking hours, the patient did not seem to suffer from fatigue, and remained in excellent health. If the movements were stopped the patient suffered intensely, and there was a tendency to, and often completed, a development of a general convulsive movement. All ordinary drug treatment failed, and the patient visited many clinics and physicians. Finally, hypnotism was tried, but the patient had a decided objection to it. Some 30 seances were held, but he was never brought so completely under its influence as to lose sense perception. After a time, however, his convulsive movements became less, and then disappeared completely, so that for three months he was able to take a position as assistant librarian. At the end of that time, however, some trouble arose and he became emotional, and the old-time convulsive movements returned. After great perseverance Dr. Mitchell himself succeeded in persuading him to again submit to hypnotism, and he somewhat improved, but he seemed to be less comfortable generally when the movements were not going on. Perhaps he lacked the attention which, because of his very peculiarly interesting condition, was showered upon him. His death took place suddenly, without any apparent cause.

Autopsy Findings.—The autopsy was made very carefully and with minute completeness by Dr. Spiller, who found absolutely nothing that could be considered pathological. Of course, the arm area of the side opposite the convulsed arm was minutely examined. The case is certainly ideal as a document in hysteria, especially as no other pathological condition had supervened to spoil any characteristic changes of hysteria that might be present.

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SEMIANNUAL MEETING HELD AT OCEAN CITY, MD., SEPTEMBER 9 AND 10, 1904.

The Faculty was called to order by the president, Dr. Edward N. Brush, in the Plimhimmon Casino at 3.30 P. M. on Friday, September 9. In his opening remarks Dr. Brush spoke of the manifest progress of medical organization in Maryland since the adoption of the new constitution. He spoke hopefully of the general good to be derived from the proper exercise of their political influence by an united profession. He referred to the removal of Dr. Wm. Osler from Maryland as in all probability the most important event in the near future of the Faculty—a very great, and in anticipation, an apparently irreparable loss. He spoke of the project, already well advanced, to place a portrait of Dr. Osler in the Hall of the Faculty, and said that a movement of much more extended scope should be undertaken to mark in an appropriate way an event of such large import to American medicine.

Dr. Fulton moved that the president be authorized to appoint at his leisure and without restrictions a committee to plan a fitting public recognition of Dr. Osler's career in Maryland, and that the president shall be the chairman of that committee. The movement was seconded by Drs. Ashby and Earle and carried.

Dr. Thomas McCrae being absent, the first number on the program was passed, and a report upon "The Present Status of Gynecology" was read by Dr. W. S. Gardner. He spoke first of cancer of the uterus, saying that the chances for recovery depended more upon timely diagnosis than on any other consideration whatever. These chances are diminished most seriously by the survival of absurd views about the menopause. The time is past when a physician can be pardoned for allowing a woman at or about the so-called climacteric age to drift along with a persistent uterine discharge or irregular hemorrhage without careful and satisfactory examination of the uterus and its adnexa. He also condemned severely the temporizing attitude of some general practitioners in dealing with fibroid tumors of the uterus. Uterine fibroids are never insignificant, and their progress is as apt to be aggravated as to be ameliorated by the menopause. They always demand operation, and the operation rule is to remove the tumor with the least possible damage to surrounding tissues. Badly-damaged uteri are better lost than saved, and hysterectomy is often preferable to myomectomy.

Dr. Arthur P. Herring made a report in neurology.

The most recent views concerning cerebral localization.—A review of the work of Dr. C. K. Mills was given in detail and illustrated by enlarged diagrammatic charts of the brain, showing the numerous subdivisions of the cortex into centers and subcenters. The diagrams of Flechsig and Ferrier were also shown to illustrate the recent development in cerebral localization. The work of Grünbaum and Sherrington on the motor cortex of the orang was pictured in a diagrammatic way. The histological studies of the cortex by Farrar and by Campbell were described in detail.

Briefly, the conclusions drawn from the review were as follows:

1. The psychic function of the left prefrontal lobe is definitely determined.
2. The motor area is definitely located anterior to the central fissure in the anterior central convolution, and the upper part of the paracentral on the mesial surface.
3. That there is a specific type of motor cortex.
4. The motor speech center in the posterior part of the inferior frontal convolution probably extends back to the anterior part of the insula.
5. The areas of special sense, *i. e.*, vision, audition, olfaction, etc., remain as heretofore described.
6. The various and manifold subdivisions of the association areas as shown in the Mills diagram are still *sub judice*.

Dr. H. O. Reik: "Recent Advances in Ophthalmology and Otology."

Silver Salts in the Treatment of Purulent Ophthalmia.—Dr. Miles Standish of Boston made recently a most excellent report based on experience in the isolation wards of the Massachusetts Eye and Ear Infirmary. He had carefully observed a large number of cases of ophthalmia neonatorum and of gonorrheal conjunctivitis in the adult, and made several very practical suggestions on their treatment. In the first place, it was demonstrated that protargol and argyrol are to be preferred to silver nitrate in the treatment of these affections. Their efficacy equals that of silver nitrate, and their application produces no pain, which is a decided advantage. Solutions of 20 to 25 per cent. strength may be employed by the physician, and weaker solutions—2 to 5 per cent.—may be entrusted to the patient for frequent use. There is no special advantage in using solutions of more than 25 per cent. strength. The second conclusion referred to the continual application of cold to these eyes, and Dr. Standish strongly opposed this custom, giving evidence to show that its tendency is to weaken the resisting power of the cornea and to favor the ulceration of that tissue, which, as you know, is the most serious complication in the disease. Thirdly, he urged great care in cleansing such inflamed eyes. All the purulent secretions should be removed by washing with sterile water or boracic-acid solution as frequently as the severity of the case demands, but the pus should be coaxed from under the lids by gentile manipulation, and not wiped away by cotton-tipped probes, as rubbing the cornea in this way causes abrasion of its epithelial coat and forms a favorable point of entry for the micro-organisms.

The Prognosis and Treatment of Chronic Suppurative Otitis Media.—As you are all aware, this subject has been much written and talked about in recent years. I think we can, however, now begin to prepare some definite figures to show the possibilities of cure by the different forms of treatment, and I want at the same time to emphasize the importance of following every case of this disease to its conclusion. To make a summary as brief as possible, I should say, in rough terms, for I cannot at the present moment give you accurate percentages, that if all cases of chronic otorrhea be submitted to careful, conscientious treatment from 90 to 95 per cent. of them may be cured. It is probably advisable to begin the treatment in every case by the simplest means, namely, to secure free drainage from the middle ear, and to keep the drum and the external auditory canal as free as possible of all purulent excretions. This can be attained in the majority of instances by simple measures designed to promote cleanliness. We may use the so-called dry treatment of draining the canal by wicks of gauze or cotton, or we may attempt to keep the canal clean by more or less frequent syringing with antiseptics. Whichever method be pursued, if it be so thoroughly employed as to prevent the accumulation of pus in the drum or the canal a cure will result in more than one-half the cases. Of the remaining 40 to 50 per cent. a satisfactory result is prevented because of imperfect drainage from the drum, or because of necrosis of the bony walls of the cavity or of the auditory ossicles. These cases will require surgical intervention, and this may be either in the form of ossiculectomy and curettement of the carious spots or of the so-called radical tympano-mastoid exenteration. The simpler operation done through the canal should be first employed, and I think it is safe to say that a cure will follow in fully one-half of the cases upon which this operation is employed. Should it fail or should the diseased area be too great to permit of its being employed, the more difficult and extensive operation performed through the mastoid should be resorted to, and if this extensive operation be done a successful result will usually follow. As far as can be gathered from statistics published at the present time, it would appear that there is a very small percentage of cases that cannot be cured by one or the other of these methods, and if you recall the dangerous consequences which so frequently attend a neglected otorrhea, the cases of mastoiditis, of brain abscess, and of general sepsis through infection of the lateral sinus and jugular vein, you will appreciate the importance of persistent and patient treatment of this affection, and never let any patient with a chronic running ear go about under the delusion that it is not a dangerous condition.

The Relationship Between Facial Paralysis and Otitis Media.—Two years ago I presented a report to the Johns Hopkins Medical Society on this subject, and stated that as the result of observation of a number of cases of the so-called refrigeratory or rheumatic facial palsies I was convinced that an inflammation of the middle ear was almost invariably an intermediary condition between the exposure to cold and the appearance of the facial deformity. Since that time I have had the privilege of seeing a much larger number of cases of facial paralysis supposed to be due to the influence of cold, and at the last meeting of the American Otological Society I presented my conclusions in a careful study of these cases and from a study of the anatomical conditions underlying the affection. I feel perfectly sure that the statement made above in regard to the pathology of facial paralysis is correct. The number of cases of facial paralysis due to direct injury to the facial nerve or to the involvement of that nerve in a suppurative process in the middle ear which has been of long standing are comparatively few. About 70 per cent. of all cases of facial paralysis are attributed to exposure to cold. To suppose that the influence of a cold wind upon the face could produce a lesion of this nerve is purely hypothetical, and we know of no analagous condition. That such exposure to cold wind or cold water does frequently produce an inflammation of the mucous membranes of the nose, throat, and ear we all know perfectly well. Now, the facial nerve is very commonly exposed in the tympanum through a natural opening in the bony wall of the Fallopian canal, and it is not only conceivable that an inflammation of the tympanum might involve the facial nerve at this point, but such a probability is the only reasonable explanation that we have for the production of facial paralysis through the effect of cold. From the clinical standpoint I can only present this evidence, that I have never yet seen a case of facial paralysis of this type that did not have at the same time an acute or subacute inflammation of the middle ear. The importance of this observation bears particularly upon the early treatment of facial paralysis. If the lesion be in the portion of the nerve which passes through the middle ear, we must direct our treatment to the ear with the idea of evacuating the cavity of its inflammatory contents, and the sooner this be done the brighter are the prospects of curing the paralysis. Facial paralysis is first seen by the family physician, and usually comes to the specialist only after a long period of delay. I beg your assistance, therefore, in the study of this matter, and ask you particularly to have the ear examined promptly in any case of facial paralysis supposed to be due to cold.

Dr. Joseph C. Bloodgood: "Recent Progress in Surgery." During the last two years the surgical treatment of diseases of the stomach has received more general attention by physicians and surgeons than any other one branch of surgery. In spite of all the excellent work done, it must be confessed, however, that surgical technique is in advance of clinical diagnosis. The experience of a number of large German clinics which have recently published their cases treated during the last 20 years clearly shows that the operations for carcinoma of the stomach are, with rare exceptions, undertaken at too late a stage in the disease. The number of cases of carcinoma of the stomach which have remained well five years after operation does not exceed 20 in the entire surgical literature. Our hopes for improvement in these results rest upon an earlier recognition. If the physician delays for the symptoms like tumor, absence of hydrochloric acid, or cachexia, there is little hope for his patient. The immediate medical treatment of simple ulcer of the stomach usually gives good results. These results are, however, in over 30 per cent. of the cases temporary (*International Clinics*, Vol. I, 14th Series, page 244). For this reason any conclusion based upon the condition of the patient at the discharge from the hospital or after a proper medical treatment at home is no criterion of the result. A certain number will die of perforation, others of hemorrhage, and a large proportion of the remainder will show increasing evidence of pyloric obstruction or other signs of motor disturbance of the stomach. At the present time one severe hemorrhage or small repeated hemorrhages associated with other symptoms of gastric ulcer are a sufficient indication for operation. Experience has shown that these symptoms are relieved by a simple gastroenterostomy.

The explanation how gastroenterostomy relieves a gastric ulcer is that it puts the stomach at rest. The larger opening allows free drainage into the intestine without aid of muscular contraction. During this stage of rest the ulcer heals.

The number of cases of secondary gastric hemorrhage or perforation after gastroenterostomy for ulcer are very few in the literature. Practically, it can be safely stated at this time that patients exhibiting symptoms referred to the stomach should be examined with the greatest care. When the physician can find no reason for the disturbance of gastric function, like alcohol, tobacco, improper food, overwork; certain general diseases, like cirrhosis of the liver or disturbance of cardiac compensation, he should bear in mind that ulcer or cancer are very common factors in the causation of these gastric symptoms. If the patient is a young female, the probabilities are that the lesion is an ulcer. If the patient, however, is over 30 years, and no cause can be found, the condition should be regarded with grave suspicion. Cancer of the stomach is usually treated for months for simple indigestion; ulcer very frequently for neurasthenia. Experience, therefore, urges that these patients be given the benefit of an exploratory operation in the early stage of their symptoms, and that delay be not made for some positive symptoms or exact diagnosis.

As these patients are first seen by the general practitioner, the hope of future prognosis in this branch of surgery rests with them. During the past month I have operated on two patients, both of whom had been treated off and on for the past three years with the diagnosis of gastric neurosis and hyperacidity. In both patients there was found mechanical obstruction at the pylorus, due to the scar tissue of old ulcers.

The experience of surgeons, whose operations for lesions of the stomach are increasing, demonstrates that quite frequently the complex clinical picture considered before operation to be due to some gastric lesion is found at operation to be seated in the duodenum. The differential clinical diagnosis of these two lesions is not of great importance. The responsibility rests with the surgeon, when he opens the abdomen and fails to find sufficient in the stomach to explain the clinical symptoms, to carefully expose and examine the entire length of the duodenum. I am inclined to feel that not infrequently in the past the abdomen has been closed after an exploratory laparotomy and the cause of the trouble in the duodenum overlooked. There is sufficient in very recent literature to indicate that duodenal diseases and their surgical treatment are arising from their hitherto obscure position. It is rather interesting, in passing, to note how the development of the surgery of one abdominal organ has led to the knowledge of lesions in another, and thus to their surgical treatment. Abdominal section for appendicitis undoubtedly marks the beginning of abdominal surgery. Apparently this led, at least it was followed by the operative treatment for gallstones. The knowledge obtained by surgeons in the exposure of the gall-bladder and its ducts of the stomach, duodenum, and pancreas prepared them better for the third and fourth advance in abdominal surgery—that instituted for the relief of lesions, stomach and pancreas.

To the general practitioner the results of gallstone surgery should indicate that one attack of gallstone colic is a sufficient indication for operation. It is unnecessary to wait for jaundice, Charcot's chills and fever, or a huge gall-bladder tumor. The surgical intervention in the early stage is so simple and the relief so quick and complete that the diffusion of knowledge of this disease should be encouraged. Too frequently the gallstone attack is repeatedly diagnosed gastralgia. The general practitioner must also be impressed that prolonged jaundice increases the danger of operative intervention. At the present time surgeons are studying with great care the indications for cholecystostomy, on one hand, and cholecystectomy, on the other. When cholecystectomy was first introduced some few years ago apparently the majority of surgeons were too enthusiastic, and performed the operation when cholecystostomy would have been sufficient. There were a few, however, whose experience with cholecystostomy in proper cases was too satisfactory to allow them to perform the removal of the gall-bladder except in selected cases. At the present time the consensus of opinion has returned to that of the smaller, more conservative group. While in appendicitis, if seen early, we wish to operate at once, in acute cholecystitis it seems better to delay until after the attack is over, because in the quiescent period one is better able to judge whether cholecystectomy is indicated, and the patient is in the better condition for this operation if it is indicated. There has been much discussion whether the gall-bladder should be examined whenever the abdomen is opened and gallstones removed if found. Theoretically, as many things in surgery, this is correct; practically, in perhaps the majority of laparotomies, not justifiable. When the patient to be subjected to an abdominal section is studied carefully, as a rule the location and character of the lesion can be, with a good deal of certainty, made out: and in the majority of cases the abdomen of the patient is subjected to sufficient manipulation necessary for the proper treatment of the lesion, the cause of the clinical symptoms. This being so, the manipulation to expose the gall-bladder is of no value unless the patient's condition would allow the further operative intervention necessary for the relief of whatever might be found. For this reason conservative surgeons are content, when they find sufficient trouble in some one organ, to confine their attention to its relief. However, when the abdomen is open and the suspected trouble not found, one should conscientieuosly continue one's search until every possible organ in which a lesion could explain the clinical symptoms is examined. An extensive experience in surgery of the abdomen demonstrates the rarity of multiple lesions. Few cases of appendicitis return with gallstones; few gallstone cases develop appendicitis. We seldom observe ulcer of the stomach with gallstones. During the past month I have studied critically the clinical histories of about 900 cases of appendicitis. Of these, 755 cases were treated in the surgical clinic of Professor Halsted in the Johns Hopkins Hospital. This clinical and pathological investigation has strengthened my previous opinion that the best time to operate is within the first 48 hours—in fact, the moment a diagnosis can be made, provided the operation is performed by one qualified to cope with any of the possible complications. In cases in which an early operation is necessary a positive diagnosis is usually not difficult. The most important local signs are tenderness and muscle spasm. Temperature is of little importance as an early sign, nor should one wait for effects on the pulse. As a rule, the respiration, if carefully noted, is an aid in indicating an inflammatory lesion of the abdomen—a rapidity of respiration out of proportion to the pulse, especially if the respiratory movements are chiefly costal. A statistical study demonstrates that 327 cases out of 755 were admitted to the Johns Hopkins Hospital surgical clinic during their first attack. Of these, 27, or 8 per cent., had general peritonitis, with a mortality of 79 per cent. One hundred and eighty-two cases, or 55 per cent., had developed localized abscess before their admission. The mortality after an abscess operation was about 7 per cent. Of the cases who survived, and in which the appendix was not found, five, or 7 per cent., returned for secondary operations. The remaining cases were in different forms of acute appendicitis without abscess or peritonitis. In 61 cases in which the acute inflammation of the appendix did not extend into gangrene there is not a single death after operation, while in the 38 cases in which the appendix was gangrenous or distended with pus there are two deaths. The remaining cases were admitted at the end of the first attack. These figures demonstrate the dangers of delay in the first attack of appendicitis if proper surgical intervention can be obtained at once. It appears to me to be a prevailing opinion among the general profession that if a case exhibiting symptoms suggestive of appendicitis is not better after the third day they should seek surgical treatment. When I grouped all the cases of appendicitis together according to the duration of the attack it was graphically demonstrated that after the third day the attack of appendicitis is either in the stage of resolution, when operation is not necessary, or in the stage of peritonitis or absecess, in which, of course, operation is imperatively demanded, but after which the mortality is greater. For this reason it is only fair to the surgeon that if he is to see your patient at all he should be called early—if possible within the first 24 hours.

In surgery of the chest the most recent and interesting contribution comes from the clinic of Professor von Mikulicz-Radecki in Breslau, by Sauerbruch, one of his assistants (*Centralblatt f. Chir.*, 1904, Bd. 31, No. 6, p. 146; *Archiv f. klinische Chir.*, 1904, Bd. 73, p. 975; *Mittheilungen aus den Grenzgeb. d. Med. u. Chir.*, 1904, Bd. 13, p. 399). The chief danger in the major operations on the pleural and mediastinal cavities is due to the exposure of the lungs to atmospheric pressure and the change of the relation between the normal pressure and that in the bronchi. The lungs collapse. Sauerbruch, in an extensive investigation on animals, has found a method in which the proper relation of the atmospheric pressure within and without the lungs can be maintained. The principle is simple. A special room is built in which the operator and his assistants and the body of the animal remain. The head of the animal is protruded through an opening in the wall containing a rubber collar. The animal, therefore, is anesthetized under normal atmospheric pressure, while the air in the operating-room is reduced or rarified to the proper pressure, so that when the chest is opened the operating-room is nothing but an enlarged pleural cavity. The amount of rarification necessary is not sufficient to be at all uncomfortable or even noticeable to the surgeon. Professor v. Mikulicz already had erected in his operative clinic a special room modeled after Sauerbruch's experimental chamber. Many details are yet to be worked out. If this contrivance proves to be successful, it will very largely increase the field of surgery of the chest. Esophegeal carcinoma can be removed through the mediastinum. Many autopsies have demonstrated the operability of this lesion. The larger clinics in this country should carefully follow this new and interesting work of Sauerbruch and be prepared to build these special operating-rooms.

In surgery of the neck the results of partial thyroidectomy for exophthalmic goiter are most satisfactory, and it is very important that this knowledge should be quickly diffused. In the past medical treatment of this disease has been most unsatisfactory. The best results in surgical treatment are obtained when the operation is performed early.

We must thank orthopedic surgeons, and especially those in Boston, for the new impetus to the study of chronic joint inflammations, especially arthritis deformans. The problems in tubercular arthritis are pretty well settled. Acute pyogenic arthritis reacts quickly to arthrotomy and irrigation if performed early. Acute polyarthritis rheumatica (acute polyarticular rheumatism), as a rule, quickly recovers under proper medical treatment. But there is a very large group of chronic non-tubercular arthritis which has been neglected because they were considered hopeless by both surgeons and physicians. A most excellent clinical *résumé* from the medical standpoint was presented by McCrae to the Section on the Practice of Medicine at the recent meeting of the American Medical Association in Atlantic City, and it is a great disappointment that Dr. McCrae is unable to be here to discuss this subject.

Just what surgery will accomplish is impossible to predict. However, we must try to begin treatment earlier. Joints must be atacked before changes in the soft parts and bones have gone too far. I trust during the coming year to present to the society the results of the work which we have planned and which is now being carried out in the Johns Hopkins Hospital.

In conclusion, I think I can safely repeat that in the majority of the branches of surgery operative technique is in advance of clinical diagnosis, and future progress in surgery depends more upon the early recognition of disease than any other factor. Schoenholzer, in discussing cancer of the stomach, expresses it so well that it will bear repetition. The duration of the disease may be divided into three stages—the first, the time during which the pathological lesion does not excite the notice of its host (this may be called the latent period) ; second, the time during which the patient delays on account of ignorance or timidity before seeking the advice of his physician, and third, the time the physician spends in making up his mind what to do. Few diseases amenable to surgical treatment become incurable during the latent stage. The better results of operative intervention in the early stage soon reach public attention, and for this reason delay due to the procrastination of the patient will undoubtedly decrease in pretty direct proportion to the rapidity with which we improve our own shortcomings. It is the duty of large clinics to demonstrate to the general profession by a series of careful observations the better results of earlier operative intervention in the various surgical diseases. Then the responsibility rests with the general profession. It is the surgeon's responsibility to reduce mortality by improvement in surgical technique; it is the general practitioner's responsibility to train himself to recognize surgical lesions in that earlier stage in which, with improved technique, the chances for the patient's immediate and ultimate relief are the best.

Dr. John Ruhräh made a short report on the recent progress in pediatrics. The most important contribution noted during the summer is the Rockefeller Institute publication, "Bacteriological and Clinical Studies of the Diarrheal Diseases of Infancy." This contains a number of papers of more than ordinary interest dealing with the relation of the Shiga-Flexner bacillus to infantile diarrhea. This bacillus seems to be associated with a large number of diarrheas of early life, and may be the exciting cause of them. Its distribution is apparently universal. It is not found in the stools or intestines of healthy infants.

Kilmer's belt for the treatment of whooping-cough seems to be worthy of some consideration. It consists of a broad elastic band secured about the abdomen. According to Kilmer, it reduces the number of vomiting spells as well as the number of paroxysms.

Shaw has recently demonstrated that the saliva of even young infants contains pytalin in sufficient quantity to digest some starch.

Squires has called attention to a new sign of basilar meningitis. On forcibly extending the head there is a dilatation of the pupil; on flexing the head there is contraction of the pupil. This reaction may be obtained several times a minute. It may be seen as early as the fourth or fifth day of a tuberculous basilar meningitis.

At the evening session Dr. Virgil P. Gibney of New York made an address entitled "Is Not the Treatment of Congenital Clubfoot Begun Too Early? A Plea for Infantile Hygiene and Feeding." He expressed his dissatisfaction with the results of his own experience and that of others in the results of treatment begun as early as possible after birth in cases of congenital clubfoot. He said that his own note-books contained records of many cases in which active treatment during early infancy interfered with the development of the child, and did not yield such a degree of improvement as justified the prolonged restraint and irritating manipulations. Many of his own cases supposed to have been cured relapsed, and not a few patients believed to have been relieved by other surgons had come under the speaker's observation with deformity as great as that originally presented. Sometimes mechanical treatment brought on symptoms so severe as to cause the abandonment of treatment, and when after an interval treatment was resumed, the same conditions recurring would again compel the abandonment of rigid dressings and forcible manipulation. Altogether he was convinced that time is lost instead of saved by interference before the child is able to sustain its own weight. These views were illustrated by may case histories, and the speaker made an earnest plea for the best possible nursery hygiene and the postponement of active treatment until the age of weight-bearing.

The address was discussed by Drs. Winslow, Bloodgood, and Ruhräh, all of whom expressed gratification at the author's views.

(Continued Next Month.)

Book Reviews.

The Surgery of the Heart and Lungs. A History and Résumé of Surgical Conditions Found Therein, and Experimental and Clinical Research in Man and Lower Animals with Reference to Pneumonotomy, Pneumonectomy and Bronchotomy, and Cardiotomy and Cardiorrhaphy. By Benjamin Merrill Ricketts, Ph.B., M.D. New York: The Grafton Press. 1904.

This is beyond cavil an odd book—odd from its title page, with the author's "Ph.B." and membership in 13 State, national and international societies advertised, to the sketchy reports of experimental surgery on the lungs of dogs, with which it closes. The author assures us in his rambling preface (and the preface is not the only part of the book suggesting the

"Wanderlust") that he has become greatly interested in the subject—a claim which no one will doubt who follows the leader through 500 pages of historical, anatomical, biological, physiological, surgical, bibliographical, and experimental information. The book assuredly represents an effort of some size, and is nothing if not complete. One can easily imagine the work necessary to review—as was necessary—the literature of this subject, to study the human and comparative anatomy of heart and lungs, to outline the physiology of circulation and respiration, and to prepare the extensive bibliographies. Dr. Ricketts deserves commendation for his industry, particularly in days when text-books are multiplying which give painful evidence of their authors' ignorance of what is being done and written.

The ground Dr. Ricketts has been at such pains to plow is, of course, hardly virgin soil, for the susceptibility of both heart and lungs to surgical treatment has been known for several years. The work that has been done is, however, relatively scanty and the development of the subject recent, Ashurst, for instance, stating (so late as 1889) that in wounds of the heart there is nothing to be done. Moreover, the surgery of these organs has not been altogether satisfying, and one is surprised and gratified by Dr. Ricketts' statement that 20 cases out of 56 penetrating wounds of the human heart recovered after suture. The author has himself done considerable experimental work on heart wounds and lung surgery in dogs, with results only fairly satisfactory. He reports having used in this work rather loose technique, and the frequent occurrence of infection makes one regret that more care was not used in keeping the research from being needlessly marred in this way.

One finds a good deal to be dissatisfied with in this book. The style is loose and not always lucid (could anyone, for instance, bring away clear ideas from the paragraphs dealing with the etiology of cardiamorphia?), and one lays the book down with the impression of having had a more or less aimless ramble through a laboratory, a surgical ward, and a library. Still, the subject is an interesting, and not a hackneyed one, and this collection of information from so many sources will be a useful addition to reference and encyclopedic literature.

A Practical Treatise on Genito-Urinary and Venereal Diseases, and Syphilis. By Robert W. Taylor, A.M., M.D. New York and Philadelphia: Lea Bros. & Co.

A book which has reached a third edition has already proven its usefulness, and though we might prefer Keyes or White and Martin or Casper to the volume before us, we could not deny that the work has taken a place—and a creditable place—in American medical literature. It is undoubtedly a thorough and useful text-book; excellent is a little more than we would care to say of it. Great—possibly undue—attention has been paid to syphilis, while cystoscopy has been scantly, almost niggardly, treated. Genital surgery has not, as a whole, received the emphasis given to genital medicine, but the book will prove a satisfactory and trustworthy guide to students.

The highest culture has a direct tendency to command sincerity in others.—*Philip Gilbert Hamerton.*

MARYLAND MEDICAL JOURNAL.

JOHN S. FULTON, M.D., *Editor*.

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BALTIMORE, OCTOBER, 1904

METCHINKOFF'S STUDIES IN OPTIMISTIC PHILOSOPHY.

METCHINKOFF'S "La Nature Humaine" has been done into English by P. Chalmers Mitchell and published by Putnam's Sons. If the book be justly reviewed, one cannot be kind or just to the author. Elie Metchinkoff's numerous and important contributions to scientific knowledge make an enduring and very distinguished record, but they have not apparently defined for Metchinkoff his limitations. Most excellent performance often fails to keep one satisfied with one's *metier*, and the greatest men are apt to illustrate most strikingly the results of pranking with unfamiliar tools. That group of very able Englishmen who followed Darwin has given more than one proof that the discipline of science is not a wholly effective check upon intellectual whimseys, and here goes one of Louis Pasteur's best disciples rainbow-chasing. The book before us is what Macaulay would call the unprofitable exercise of an ingenious mind. It is interesting, however, and is exceedingly well thought of by the author and his friends.

In an editorial introduction the translator says, quoting Metchinkoff: "If it be true that man cannot live without faith, this volume, when the age of faith seemed gone by, has provided a new faith—that in the all-powerfulness of science." In his preface the author says that the book is a program for "younger investigators who wish a point or orientation for their labors." Notwithstanding the advances of science, partly, indeed, by reason of these advances, man is "without orientation when he has to determine the course of his life or to explain to himself his true relations to such categories of humanity as family, nation, race, and human race." Science "has robbed mankind of the consolations of religion without being able to replace them with anything more exact or more enduring."

Metchinkoff proposes that science shall supply mankind with other and better consolations than those which science has destroyed. This is at once an appalling summary of the past and a stupendous augury of the future. He declares that the problem of the universe and man is now soluble. "It is time," he says, "to subject the problem of human nature to rational investigation by the rigid methods of modern science." He approaches the task through a survey of the lower forms of life. Among beings inferior to man he finds harmonies and disharmonies, or adaptations perfect and imperfect, insomuch that these creatures may be roughly divided into two classes. First and happiest are the orchids, absolved from sexual contact, and the fossorial wasps, which complete all parental duties before depositing their eggs, and never look upon their offspring. For such beings this is the best of all possible worlds; they are optimists. At the other extreme are the "lady birds," having an irresistible but hopeless passion for the nectar of the dandelion, and the moths, whose reproductive instinct lures them into the flames. These believe that existence is a sad mistake; they are pessimists.

But there are many grades between the perfect harmony of the orchid and the perpetual discord of the "lady bird," and somewhat nearer the dissonant end of the scale is man, the ingenious offspring of anthropoid parents. The human body, the unsurpassed and fully-justified ideal of perfection in form, includes in its substance many disharmonies. Among these false notes are a tendency to ugliness in old age and sickness, a covering of functionless hair, corruptible teeth, a mischievous vermiform appendix, a degenerating cecum, an unnecessary stomach, an insubordinate hunger, a purposeless hymen, a boneless virile organ, defective moral perceptions, undeveloped or perverted family and social instincts, and the fear of death.

The human mind has ever been chiefly engaged upon the disharmony last named, and to quell the predominant fear of death all religions and all philosophies have proposed one or the other of two remedies—a belief in the immortality of the soul or a resignation to inevitable annihilation. Science discerns the soul of the protozoan and the immortality of some cells, but, following the diminishing power of regeneration in what is assumed to be the rising scale of cell-differentiation, science loses the thread of everlasting life in the nerve cell. "A future life has no single argument to support it, and the non-existence of life after death is in consonance with the whole range of human knowledge."

Systems of philosophy have nearly all denied the existence of a future life and of the immortality of the soul. Most of them have admitted some vague, incomprehensible, eternal principle, but they all bid us bow to the inevitable. The physiological basis of this philosophical resignation is the object of Metchinkoff's quest.

The four chief grievances of the race are birth, disease, old age, and death. "Science ('the youngest daughter of knowledge') reached first (*i. e.*, before religion or philosophy) one of these four sorrows, the suffering due to disease." Our author's idea of the youth of science is decidedly ametropic, for he declares that science has arrived at the bedside of sick humanity within a generation. All the achievements of medicine before the days of Pasteur and Lister he ignores, as not to be distinguished from prayer and incantation. No one will diminish the estimate which Metchinkoff places on the greatly increased power of modern science to assuage human suffering, though many of us are more weighted than he with the consideration of man's unreadiness to appropriate these benefits, and some of us estimate the status of medicine from the viewpoint of its performance rather than that of its power.

The study of disease being now safely entrusted to the hands of scientific men, the next field of inquiry is that of old age. The essential feature of senile degeneration is "the atrophy of the higher and specific cells of a tissue and their replacement by hypertrophied connective tissue." Old age is "a conflict between the higher elements and the simpler or primitive elements, and the conflict ends in the victory of the latter." The *rôle* played by the phagocytes in the destruction of the higher cells is considered in detail. As a logical method of staying the progress of senility the author proposes to strengthen the higher cells by injecting serums capable of nourishing specific cells. He alludes to the difficulty of obtaining the human brain, liver, kidney, and other organs in a state of freshness and health for the purpose of preparing nutritive serums. He also notes that in the conflict between the phagocytes and the "noble" cells the former are greatly assisted by the vices of mankind and by the flora of the great intestine. In the big gut are formed "the slow poisons which, in the absence of alcoholism and syphilis, produce the arterial sclerosis of old age." A man may lengthen his life by shortening his gut, or, if he is attached to his intestine, he may drink sour milk and "transform the wild population of the intestine into a cultured population." The postponement of senile decay, the author thinks, should reach to or beyond the age of 120 years.

He finds certain obstacles in the way of investigating senile degeneration, one of them being the difficulty of obtaining old animals. "Owners prefer to keep old animals until they die and to bury them instead of devoting their bodies to a scientific investigation of such great importance to mankind." In America a despondency deeper than any known to science would be required to perceive such a difficulty as this.

Having promised us that before very long it will be possible to modify old age into a healthy and happy process, the author proceeds to the scientific study of death. His first inquiry is as to natural death, and he concludes that it is impossible at present to be exact in speaking on that subject. Natural death occurs among inferior creatures, but its phenomena have not been satisfactorily studied. Next he searches for instances of the instinct of death, supposing that natural death should be preceded by "the disappearance of the instinct of self-preservation and the appearance of another instinct, the instinct of death." One doubtful instance is recorded.

It is suggested that the Biblical phrases *"full of years"* and *"full of days"* refer to the "instinct of death, developed in well-preserved old men who had attained ages of from 140 to 180 years," and that the sweep of time may bring back to us this missing instinct. This is really the crowning gift promised in the author's optimism, that the scientific study of old age may bring men to such fullness of years that they may say with Tokarski's aged woman, "If you come to live as long as I have lived, you will understand that it is possible not only not to fear death, but to feel the same need for death as for sleep."

In order to reach this goal "mankind must be persuaded" (as the author is?) "that science is all-powerful." When society, politics, and science itself, or medical science at least, have all been brought to this faith the religion of the future will have been established.

Certain parts of the work show Metchinkoff in unquestionable mastery of his data; in other parts the author may appear to as great advantage to other critics, but here and there one finds utterances which throw some doubt upon his ability to handle data so diversified. One or two of them may be mentioned. "The frequency of suicide has greatly increased among civilized peoples. There is no need to tabulate proofs of a notorious fact." There are no proofs that suicide is increasing.

Infants, "as a rule, are much more subject to appendicitis than the aged." "According to Treves, 36 per cent. of the observed cases are under 20 years of age." Does not Metchinkoff know what part of the living population is under 20 years of age?

"The human capacity for procreation throughout the year made the race extremely prolific. Probably this prolificness is the reason why man has multiplied so enormously, in spite of the barriers to his progress and the high rate of mortality to which he is subject." Surely, a consideration of the vital statistics of a grass plot or of a pantry might have prevented a scientific man from penning such a sentence.

Medical Items.

Mayor Timanus proposes to abate the smoke nuisance. A most excellent proposition.

A tablet to the memory of Dr. Jesse W. Lazear will be unveiled at the Johns Hopkins Hospital on October 5. Dr. James Carroll, the surviving member of the original yellow-fever commission, will be the orator of the occasion.

A very large estimate was placed upon the value of a human life in a recent damage suit in Texas, when a verdict of $30,000 was given against the St. Louis & Southwestern Railway Co. in favor of Mrs. Hutchins, whose husband was killed in the railroad yards at Wylie.

The Reading (Pa.) Medical Association is leading a movement to establish a sanatorium for the treatment of tuberculosis. A large meeting for this purpose was held in Reading on September 16. Dr. Lawrence Flick, director of the Phipps Institute, was among the speakers.

A Japanese gentleman finds a delicious bit of unintentional humor in a recent letter of Dr. W. W. Keen about the Japanese exhibit at St. Louis. Dr. Keen said of Japan, "What she is doing in war she is doing in medicine," and Mr. Shasti says that at that rate Japan must be playing merry blades with her sick.

In the domain of water hygiene copper is king for the nonce. Baltimore's impounded water was coppered in large amount at no profit. Washington was tempted, but withstood. The State Board of Health of Illinois is conducting experiments to determine whether typhoid and cholera germs perish in copper containers. Altogether, Moore's paper on the subject has aroused a great amount of interest.

Among the distinguished visitors to Baltimore during September were Dr. Johannes Orth, dean and professor of pathology in the University of Berlin; Dr. Desnos of the Neckar Hospital in Paris, and Dr. T. Clifford Allbert of London, who will be one of the chief speakers at the opening of the surgical building and clinical amphitheater at Johns Hopkins Hospital on October 3.

A new and admirable enterprise has been undertaken at Charlottenberg, Germany. A school has been established in a forest near the city for delicate school children. About 120 anemic or otherwise ailing children are selected from the public schools and sent to this school daily. There are but about two and one-half hours of indoor school work each day, the rest of the time being spent in the woods or in the pavilion. Both teachers and pupils are transported daily at the cost of the city. Food and medical supervision are also provided.

J. Korosi, the municipal statistician of Budapest, recently read a paper before the British Medical Association on the comparative mental powers of girls and boys. We say girls and boys because his material consisted of a large number (nearly 1,000,000) of examination papers of children attending the public schools of Budapest in the last 27 years. He finds that in the earliest school years the sexes are about equal, but that a gradual gain is made by the girls, until at the end of school life the girls have a very marked advantage. Korosi believes, however, that this gap is more than recovered by the masculine mind in later years.

The Frederick county grand jury in its recent report on September 26 considered three subjects of great importance from the standpoint of public health. The town fathers of Frederick are severely criticised for their neglect of the hogpen and slaughter-house nuisances. There are nearly 300 hogpens in the city, it is said, most of them in a very foul condition. The city council has ample authority, and is accused of dereliction in allowing these nuisances to persist. The Frederick city water supply is also considered at some length, and the city is advised to buy up its watershed. The use of cocaine in Frederick is also spoken of as a serious matter. Two indictments were found for the unlawful sale of cocaine.

The report of the Tuberculosis Commission of Maryland has been transmitted by Dr. W. S. Thayer, president, to Governor Warfield The formation of a special commission on tuberculosis was proposed by the State Board of Health in 1901 to Hon. John Walter Smith, then governor of Maryland. Governor Smith gave the subject a very prominent place in his message to the legislature of 1902. As a result an act was passed authorizing the appointment of five persons to investigate the problem of tuberculosis in Maryland. Governor Smith appointed Drs. W. S. Thayer, Lillian Welsh and W. Frank Hines, and Messrs. John M.

Glenn and George Stewart Brown. The commission elected as medical officer Dr. Marshall L. Price, who gave his undivided attention to the work of the commission. The report begins with a reprint of the preliminary report which was destroyed in the fire of February 7, 1904, and so missed distribution. The preliminary statement summarized existing knowledge of tuberculosis, gave a brief review of the status of the problem in Maryland, and made suggestions concerning the prophylaxis of the disease and a more extended study of local conditions. Part II of the present report considers in detail the prevalence and distribution of tuberculosis in Maryland, data of great variety and completeness having been gathered for the purpose. This part of the work represents a great amount of patient inquiry and thorough analysis, and the results obtained are of a very high value. Some of the charts employed to illustrate the statistical findings, particularly those on the economic relations of tuberculosis, are both novel and convincing. They present that aspect of the subject which has the most forcible appeal to statesmen, but which has heretofore been presented but vaguely. The third part of the report is a record of the Tuberculosis Exposition given in January, 1904, at McCoy Hall, that very striking object-lesson which so impressed the whole country that in the popular mind it was supposed to have been planned and executed for the benefit of the country. The report ends with a record of recent legislation in Maryland on the subject of tuberculosis and a brief history of the rise of the antituberculosis movement in this State. The report is, in short, very highly creditable to the State and to the commission. Nothing better of the kind has been done in America

Col. Chaille Long, whose experience as an explorer and traveler has given him a knowledge of many points in practical hygiene, has sent the following interesting letter to the secretary of the State Board of Health. Dr. Fulton disclaims the credit of priority in calling attention to the surface closet as a progagator of typhoid. Colonel Long is a Marylander, a native of Somerset county, the recipient of distinguished honors from foreign governments, and has recently received from the State of Maryland a gold medal in recognition of his services to humanity as an exploror of the Dark Continent. The "blessed village" alluded to in Colonel Long's letter is probably Princess Anne, though Colonel Long does not say so:

Hanover, Howard Co., Md., Aug. 27, 1904.

Dr. John S. Fulton,
Secretary Board of Health, Baltimore:

Mr. Secretary—I have read with interest in *The Sun* your timely note concerning the prevalence of typhoid fever at Mt. Savage, Md., in which you ascribe typhoid to "absence of sewerage system and the *surface closet.*"

You are, Mr. Secretary, the first person to invite public attention to the source of typhoid, and you are to be congratulated, and merit well indeed of the entire country.

The "emergency warning" to boil water, you will agree, is well, but palliative, and not entirely prophylactic. The surface closet, a reproach to a people affecting civilization, is the inevitable source of pollution of all the wells and springs of the country. The singular feature of the subject is that you cannot make the public understand it. When a boy an epidemic of typhoid occurred in my blessed little village—blessed, all save the pestilential and noisome odors exhaled from the abominable surface closet. I recall that I marshaled a band of wicked boys and led them to the assault one night a long time ago, professedly for fun, turned over and smashed 50 or more of the ghastly *focaria* of fevers deadly. Don't think, Mr. Secretary, that the lesson conveyed by children in revolt was appreciated. *Nonni! I* received a walloping (not severe, I confess) only to oblige the aggrieved, but my partisans fared worse, and were treated as real malefactors to a red-hot application of birch. We might have saved our townspeople, indeed *the whole of the United States in principle,* 50 years' of typhoid! As for myself, I had already become immune, having successfully combatted the entire category of fevers.

The remedy? In Europe, in the absence of sewers, typhoid is successfully prevented—eradicated—by use of *tinnettes* (tin or zinc boxes in which disinfecting matter is placed and which (the boxes) are removed and replaced each day).

Boiled water, then, and *tinnettes,* my dear Doctor, should be rendered compulsory in *country* as well as town under a penalty of $50 or imprisonment. With the disappearance of the terrible and disgraceful surface closet—the disappearance of typhoid.

Very truly yours,
Col. Ch. Chaille Long.

MARYLAND
MEDICAL JOURNAL
A Journal of Medicine and Surgery

Vol. XLVII No. 11 BALTIMORE, NOVEMBER, 1904 Whole No. 1038

TREATMENT OF ACUTE AND CHRONIC NEPHRITIS, WITH SOME REMARKS CONCERNING THE EDEBOHLS' OPERATION.

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Clinically, medical nephritis falls into two divisions:

I. Acute, with a subdivision—nephritis of pregnancy.

II. Chronic nephritis, which may be divided as follows: (*a*) Chronic parenchymatous nephritis; subvariety, chronic parenchymatous hemorrhagic nephritis (this is the large white kidney). (*b*) Chronic interstitial nephritis, which is divided into, first, the contracted white kidney, with secondary cirrhotic changes (this is the least common form); second, the primary cirrhotic kidney, or, as it is often called, the small red kidney, which is especially characterized by a great increase in connective tissue.

Finally, the arterio-sclerotic and the amyloid kidney may be found with any of the other forms.

As you know, acute nephritis is most often met with as a complication or sequel of some one of the many infectious disorders both in childhood and in adult life, and although we are still in ignorance as to the exact nature of these etiological poisons or toxins, a word in reference to the convalescence of infectious disorders will not be amiss. In scarlet fever, for instance, we certainly reduce the chances of kidney complications by forbidding unnecessary exposure until desquamation is complete, even in the mildest cases. In addition to the diseases just referred to, exposure to cold is a most potent cause, and whenever it is possible the physician should warn and explain to those individuals whose occupations necessitate their being brought in intimate contact with cold, and especially dampness, the risks of such exposure. Lastly, there are cases of acute nephritis in which no history of previous infection or exposure can be obtained, and we are at a loss to explain the condition of the kidney except by a consideration of the unoxidized food products in the blood. Of this I shall have something to say later.

The individual suffering from acute nephritis must be put to bed at once, and it is well to remember that in the subsequent chain of events, be the symptoms mild or severe, the disease often tends to get well of itself, so that due consideration must be taken of the fact that evil may result from an overzealous administration of drugs. Better give no medicine at all rather than a drug of doubtful value or one which may add to the burden of an already embarrassed kidney. Our general aim, therefore, must be not so much to cure our patient as to place him in the most favorable circumstances for recovery. In winter sheets had better be discarded and the patient put between blankets. The room should be kept warm, but not hot, and our efforts should be directed towards lessening renal hyperemia by attention to the skin and bowels. It is usually my custom at the beginning of an attack to administer calomel in one-tenth-grain doses, followed in four or five hours by a saline purge, this saline to be repeated daily, and with a diet of milk or any of the various forms of gruel, plenty of water, and an occasional extra blanket to promote mild diaphoresis the patient will usually run an uneventful course ending in recovery. If, however, the attack is severe, with dropsy, scanty and high-colored urine, with symptoms of impending uremia, there is no more useful remedy than frequent hot-air baths, which quickly promote free sweating. If, by chance, the skin is dry and hot and diaphoresis not easily induced, the temptation to administer jaborandi is strong. I have on several occasions seen positive harm result from the drug, owing to the extreme cardiac weakness produced. If, however, the patient's condition warrants, and there is a full bounding pulse, a one-twelfth or a one-tenth grain of pilocarpine may be given with advantage. Cupping over the kidney or the frequent application of hot compresses over the lower back and loins will give great relief to the pain and will reduce kidney hyperemia. If the bowels are very constipated, jalap should be given, followed by salts. If free purgation is not produced, elaterine in hourly doses of one-tenth grain will be effectual in three or four hours. The nausea which frequently accompanies these conditions will often contraindicate these remedies. In such cases high rectal normal-salt enemas are most serviceable, followed by minute doses of calomel. The use of diuretics in severe acute nephritis has been in my own experience disappointing, and in certain cases even dangerous. The one commonly employed is the infusion of digitalis. My chief objection is the gastric distress so often set up, together with the increase of arterial tension which follows its administration if kept up long enough to produce an increased flow of urine. Digitalis has, however, its place, and may be employed with advantage especially when dropsical accumulations are large and when the symptoms of cardiac dilatation are threatening. A milder and, I think, a very serviceable diuretic is sweet spirits of niter, given in half-dram to dram doses every three or four hours, or, as Beverly Robinson suggests, a dram of niter to a glass of water, and of this a couple of swallows every hour. In spite of all our treatment symptoms of uremia will show themselves in a certain percentage of cases, and just here I wish to lay stress upon a point often overlooked, that radical measures taken at this stage are infinitely better than waiting until uremia, with all its accompanying evils, are fully upon the patient. Therefore, if in spite of frequent sweating and the liberal use of purgatives no benefit ensues, I know of no better procedure than bloodletting, particularly when the arterial tension is high, the pulse being full and bounding, and the second aortic sound accentuated. The loss of from 12 to 15 ounces of blood usually suffices, and should be followed by subcutaneous injection of salt solution. The latter procedure is, of course, contraindicated when there is much dropsical accumulation.

For uremia, in addition to bloodletting and salt solution, nitroglycerine is often valuable, and during convulsive seizures inhalations of chloroform and rectal injections of bromides will lessen their severity. The use of morphine, while not altogether safe, is at times essential, being certainly less liable to do harm in these cases than in the chronic forms of the disease. Inhalations of oxygen must not be forgotten. For the anemia following an attack Bashan's mixture or Reynold's mixture generally suffice. Fresh air and sunlight and gradual, though guarded, increase in food are in order. Food is often withheld too long, and albumen and casts may disappear more quickly by a more liberal use of well-selected articles of diet.

Chronic nephritis offers most difficult problems in treatment, due largely to the manifold complications brought about by renal inadequacy. I wish to take up first the care of the early stages, and I cannot emphasize too much the fact that in this stage our best efforts must be continually put forth. Osler has called attention to the fact that there are many cases, especiallly in elderly people, in whom casts and a certain amount of albumen are found in the urine, and in whom there is not so much real nephritic degeneracy as there is loss in tone in the arterial system, with beginning senile changes in the kidney substance. This condition, when treated early and with appropriate measures directed towards daily life and hygiene, may not develop into true nephritis at all. Such cases, though not very numerous, are well worth careful study. On the other hand, the large majority of persons who apply for relief of some of the many early symptoms of chronic nephritis, and who have albumen and casts in their urine, present often the most difficult problems of diagnosis. Among the points which help us in our efforts toward accurate diagnosis may be mentioned the following: First, subjects with nephritis will be found to be eliminating in 24 hours less solids than normal. It therefore follows that a constant low specific gravity is of great importance. Next, the condition of the heart and arteries must be considered. Cardiac hypertrophy, with a displaced point of maximum cardiac impulse and an apparently beginning arterio-sclerosis, are almost conclusive in their significance. Finally, albuminuric retinitis is pathognomonic.

Before leaving the subject of early diagnosis I must mention two other misleading conditions, namely, that there are certain individuals, generally between the ages of 16 and 20, in whom albumen and casts may be found fairly constant in their urine without any structural derangements of their kidney substance. Such cases have been accurately described by Broadbent, Pavy, Armstrong, and lately by Ogden, and are known as the albuminuria of adolescence or functional albuminuria. It is in all probability due to some temporary derangement of the vascular system brought about by faulty metabolism, and is in the end generally cured by a correction in their dietary and more time spent in the open air.

The second and more common problem, but not less difficult for solution, is the question as to whether the albumen and casts present are due to true kidney change or to venous congestion as a result of valvular defect. Such questions in many instances remain unanswered until measures directed toward the heart finally restore the vascular balance, when the casts and albumen should disappear if the kidneys are sound.

The absence of casts and albumen in the urine, however, must not always be taken as a sign of healthy kidneys, as Schwartzkopf's recent article shows, and Treutlein points out the fact that certain bacteria in the urine may cause a disappearance of casts. To quote Rochester's expression, the treatment of chronic nephritis should be along lines of alimentation and improvement of nutrition, and in order that materials to be excreted should come to the kidney in the most unirritating form, metabolic processes should be carried to completion. The truth of this statement is well emphasized by the works of Israel and Croftan, the latter especially, who found that uric acid and its congeners, the alloxuric bases xanthin and hypoxanthin, produce anatomical lesions in the kidney, increase in blood pressure, with eventual cardiac hypertrophy. I feel, therefore, that I am quite justified in saying that diet and hygiene are almost more important than drugs. It is well to remember, however, that a too strict diet is often productive of harm, for we have confronting us two most undesirable conditions, namely, anemia, on one hand, and uremia, on the other. In the quiescent stage a good rule to follow is one meal with meat, one of fish, and one with neither. Vegetables (usually the green ones), plenty of water, warm clothing, and moderate exercise constitute the best treatment, avoiding medication except when necessary.

For the dropsy, when slight, rest in bed, with salines and a little cream of tartar lemonade, will usually bring good results. Headache, vertigo, gastric disturbances, etc., may be coped with successfully in this way. Nitroglycerine may be given for persistent and often harassing head symptoms and dyspnea. A Turkish bath about once a week will give the patient great comfort.

In advanced stages dropsy of the serous cavities must be carefully looked for and treated by proper methods of aspiration. Edema of the lungs may be treated by hot-air baths, and if it reaches alarming degrees, bloodletting is in order. I have seen patients with edema of the lungs and marked Cheyne-Stokes' respiration completely relieved by this procedure and able eventually to leave the hospital. For renal asthma vaso-dilators, like amyl nitrite in severe cases, and nitroglycerine and inhalations of oxygen in moderate forms are our best remedies. Here it is that morphine occasionally does harm, and its use is contraindicated where there are symptoms of approaching uremia with scanty urine. The question of diuretics is often a most puzzling one, and I know of no rule fitting their administration in every case, as they are capable of harm as well as good. Where there is a weak, tumultuous heart and relaxed vessels, with edema or other well-marked nephritic symptoms and little or no gastric disturbance, infusion of digitalis, Trousseau's diuretic wine, or Addison's pill will often work wonders. Care must be exercised in giving Addison's pill not to produce salivation by the calomel contained in it. Diuretin, the salicylate of theobromin, alternated with tincture of digitalis, when there is failing cardiac compensation and large dropsical effusions, must not be forgotten.

McVail reports two cases of uremic convulsions successfully treated by spinal puncture, relieving intracranial pressure.

I wish before closing to give some account of the present status of decapsulation as a cure for Bright's disease as the method appears to the profession after over 175 cases have been reported in this country and abroad. A most interesting controversy concerning the operation is now in progress. I shall attempt to summarize the literature, which is voluminous. It must be remembered that before Edebohls advanced, in 1901, his idea that all forms of the so-called medical nephritis should be viewed from a surgical standpoint Reginald Harrison had published his observations on the remarkable recoveries which followed surgical procedures on infected kidneys where the capsule had been removed or split. These observations brought forth much discussion among surgeons, the consensus of opinion being that the utility of decapsulation was based upon definite favorable results in infected or surgical kidney. It was on these lines that Edebohls, I imagine, advanced his idea that what applied to surgical kidney was just as applicable to Bright's disease. His first series of papers, published in 1899 to 1901, advocated nephropexy for floating kidney, without reference to chronic nephritis. The results of these very successful operations led him in 1901 and later to operate on all cases of

Bright's disease. His ideas as to how a cure or improvement takes place are as follows:

1st. The formation of strong connective tissue or bands attaching the kidney to its surroundings.

2d. The existence in these tissues of very large and numerous blood-vessels running between the kidney and adjacent structures.

3d. The preponderance in number and size of newly-formed arteries over newly-formed veins.

4th. The general direction of arteries is toward the kidney, and the adequate blood supply to the kidney established by this operation leads most probably to gradual absorption of interstitial or intertubular inflammatory products and exudates, thus freeing the tubules and glomeruli from compression, constriction and distortion, and permitting in them a normal circulation.

Before taking up arguments for or against these ideas let us look for a moment at the statistics which have been collected by Guiteras and analyzed by Elliott. Guiteras in 1903 succeeded in collecting from the literature 120 cases in which decapsulation had been performed for all sorts of conditions of the kidney, both medical and surgical. Of these Elliott discarded 16 on account of lack of data, and has added to the list seven cases analyzed by Suker and one by Norman Henry. Classified clinically they were:

1st, 29 cases of floating kidney; 2d, one renal calculus with infected kidney; 3d, two pyelonephritis; 4th, one renal sarcoma; 5th, two subacute glomerulo-nephritis; 6th, one arterio-sclerotic renal atrophy; 7th, 43 chronic interstitial nephritis; 8th, 33 chronic parenchymatous nephritis.

An analysis of each of the eight classes is briefly as follows:

In the 29 floating kidneys with albuminuria and casts, nephropexy performed with or without decapsulation was followed by excellent results.

Of the three cases of calculus and pyelonephritis, two were relieved and one died.

The renal sarcoma died.

Two cases of subacute glomerulo-nephritis, one following scarlet fever, both were apparently benefited.

The one case of arterio-sclerotic renal atrophy died one year after operation.

Of the cases of chronic interstitial nephritis seen early, one died, 10 were symptomatically improved, two were unimproved, and one made worse. Except in one instance, the urine was not augmented after operation, and in a number of cases there was a positive diminution in amount after operation.

In the late cases, 22 died, four were improved, two unimproved, and one made worse.

Of chronic parenchymatous nephritis there were 33 cases. Of these, 13 died, 12 improved, and eight were unimproved.

The total cases operated on for chronic nephritis were 76. Of these, 47.36 per cent. died, 34.21 per cent. were improved, 15.78 per cent. unimproved, and 2.66 per cent. were made worse. The combined results are 65.80 per cent. of cases operated on without benefit. Judging, then, the statistics, no one, I think, can be especially enthusiastic over operative procedures in this disease, and yet, judging by the unqualified statements of Edebohls, the most ardent supporter of decapsulation, one must say either that his reports are not according to facts, or that repair is brought about to damaged renal structures as a result of the operation by means which as yet are not explained. Such men as Roosing, Ehardt, Lenander, and Kummel, authorities in kidney surgery, are unanimous in their condemnation of the procedure. Indeed, experimental work on animals and autopsies in man have failed, with few exceptional reports, to confirm Edebohls' increased vascular-supply theory. Questions of this nature ought to be easily solved. Newly-formed vessels ought or ought not to be discovered running from the perinephritic connective tissue and fat into the decapsulated kidney. Edebohls, on the one hand, quotes the works of Johnson, Ferrarini, Gouget, and Bussan, who claim to have always found anastomotic ramification, while Albaran, Bernard, Emerson, and lately Hale and Herxheimer, and Gifford, found none. It is only by the comparison of their experimental work that one can form any idea of the true results of these studies. On Edebohls' side I can find no such painstaking work as has been done on the negative side of the question. The affirmative statements are vague. The drawings are still less convincing. On the other hand, nothing could be more accurate from a scientific standpoint than the studies of Hall and Herxheimer and of Gifford. Hall and Herxheimer experimented on decapsulation in animals in whom degenerative necrosis of the cells of the convoluted tubules and a small-celled infiltration had been produced by injections of neutral ammonium chromate, reaching the conclusions that from an anatomic standpoint decapsulation did not offer any advantage, as they could never find any increase in vascularity at intervals of one to 50 days after operation. Gifford's results are practically the same.

Judging from these negative experimental studies, how do we account for the marked improvements often seen in nephritic cases in whom decapsulation has been performed. It must be remembered, in the first place, that objections to the operation were raised chiefly in regard to chronic interstitial and diffuse nephritis. Good palliative results, and indeed cures, have been obtained by decapsulation in those forms of the disease which are characterized by intracapsular tension. The views of Harrison, Isriel, and Pausson seem more reasonable than the theory of increased arterial-blood supply, their ideas being that an increased urinary output, with relief of nephritic pain and general amelioration of symptoms, is due to the removal or splitting of the capsule, which allows a free expansion of the organ.

Finally, it is of value to note the attitude assumed by surgeons at the recent meeting of the Thirty-third Surgical Congress held in Berlin last June. Stern, Bakes, Reidel, Kummell, and others were of the opinion that operative procedures on chronic interstitial nephritis, the latter stages of chronic parenchymatous, and chronic diffuse nephritis are unjustifiable and unscientific.

CONCLUSIONS.

I. So far as the results show, Edebohls' operation is applicable in only a very limited number of cases of medical nephritis.

II. In chronic interstitial nephritis, in late or contracted forms of parenchymatous and diffuse nephritis, the results do not warrant operative procedures.

III. Edebohls' theory of revasculization of kidney substance by decapsulation has not been proven.

IV. The best results have been obtained in movable kidney with albumen and casts.

V. Benefit and actual cure have been obtained in acute and early stages of chronic parenchymatous nephritis, where pain is present and suppression of urine threatens the life of the patient.

THE ETIOLOGY OF PROSTATIC HYPERTROPHY.

By John W. Churchman, M.D.,
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The chapter of medicine which deals with the cause of disease is by no means as satisfying reading as one could wish. Indeed, if we eliminate those conditions directly traceable to a known bacterium, or to a poison, or to a traumatic process, we are left with a large class of clinical entities as little explained as in the days when a "miasma" was cited as the origin of every disease not traceable to sedentary habits, picking of the nose, or a redundant prepuce. In this unexplained class prostatic hypertrophy has long stood, but the recent attempt of a careful observer to formulate the actual cause of this condition by pathological investigation, and a recent exhibition of clinical statistics which tend to overthrow this dogma, make it of interest to review the ideas which have been previously held before undertaking a *résumé* or estimate of the later work.

Seventy-five years ago Home, noticing the disadvantageous position of the vesical veins in relation to the heart, with the resultant tendency to habitual congestion, assumed the anatomical peculiarity to be the cause of the pathological condition, and any circumstance increasing congestion (high living, etc.) was thought to increase the tendency to prostatic hypertrophy. In some cases he thought that an actual rupture of the vessels (analogous to apoplexy) preceded and caused the hyperplasia. Wilson, in 1881, thought that celibacy, on the one hand, and venereal excess, on the other, were responsible for the condition, while Sir Charles Bell fell back on a "predisposition" (the nature of which he failed to define), supplemented by vesical irritation, causing muscular overaction, drawing back of the middle lobe, and urinary obstruction.

Samuel Cooper emphasized the frequency of the disease in those who have led sedentary lives. Astley Cooper and Brodie thought it a physiological manifestation of old age, and not a disease.* Gross and Mercier listed all the causes of habitual prostatic engorgement, and the presence of any one of these was considered a satisfactory explanation of prostatic hypertrophy. Syphilis was, strangely enough, thought by Amussat to be a causal factor, instrumentation, foreign body in the bladder, and stricture being held responsible for some of the cases. Desault believed the condition to be inflammatory—*i. e.*, gonorrheal—in origin, while Civiale thought calculus and stricture of the utmost etiological importance. Sir Henry Thompson unequivocally opposed the views of his predecessors. "True hypertrophy," he said, "never has venous congestion for its cause; * * * venous congestion impairs structure, * * * but never stimulates growth." And a prostate once inflamed was, he thought, rendered by that fact more prone to subsequent atrophy than hypertrophy. For him prostatic hypertrophy was a true neoplastic change similar (and in this he and Velpeau agreed) to the fibro-myomatous new growths of the uterus.† The modern French school, under Guyon and Lannois, has taken a very different position. For them the disease is not a local one, but the prostatic condition is only part of a general senile change associated with genito-urinary sclerosis. The change in the bladder wall is an early phenomenon—residual urine accumulates, cystitis sets in, and an enlarged prostate results. Casper and Motz, however, have demonstrated that sclerosis can exist without hypertrophy and hypertrophy without sclerosis, and the theory of Guyon may be said to have been disproven.

In 1896 Ciechanowsky published a series of monographs reporting pathological research, which apparently settled once and for all the moot question. Arterial atheroma was refused as an explanation, prostatic adenoma was denied, and the changes found in both hypertrophied and atrophied prostates, as well as in the bladders of these cases, were said to be inflammatory in character. "In no case is the glandular tissue absolutely increased. The increase of glandular tissue is only apparent, and arises wholly through the dilatation of the lumen. * * * Without exception changes in the stroma [are] adequate to explain all phenomena. These changes depend on a proliferative connective-tissue process. If these productive stroma changes localize themselves in the central parts of the prostate in the vicinity of the main excretory duct, then they may produce a narrowing or obliteration of the lumen of this duct which may cause an accumulation of the secretion and an enlargement of the peripheral lobules. * * * If the connective-tissue changes in the stroma occupy mainly the periphery, and if they localize themselves in the neighborhood of the terminal branches of the tubules of the acini, then, by adhesion and atrophy of the compressed tubules and by shrinkage of the connective tissue in the stroma—a prostatic atrophy—there will be produced a diminution of the whole organ." This pathological explanation of prostatic hypertrophy as essentially a chronic inflammatory process has, aside from the support given it by the investigations of Ciechanowsky, been verified by Greene and Brooks, by Crandon, and more recently by Rothschild. The latter first calls our attention once more to the frequency of posterior invasion in an anterior urethritis—the figures varying all the way from Finger's 63 per cent. (in private patients) to Letzl's 92½ per cent.—and next to the frequency of a complicating prostatitis in gonorrheal urethritis, Montaguon and Eraud having found it in 70 per cent. of the cases, Casper in 85 per cent., and Frank in 100 per cent. If we add to these the cases in which a chronic prostatitis exists, though all signs of urethritis have disappeared (cases often overlooked both clinically and at autopsy unless specially sought for, as Rothschild sought for them, when they will, in a certain percentage of cases, be found), it becomes plain that chronic inflammation of the prostate occurs in such a large majority of patients whose urethra has been infected as almost to warrant our considering it a necessary sequel. But to apprehend the frequency of chronic prostatitis *among men in general*, and not merely among gonorrheics, we must remind ourselves once more of the frequency of gonorrhea. Josef is Rothschild's authority for the statement that the infection includes 70 to 90 per cent. of men, and Blaschko says that of all men marrying after the thirtieth year, everyone will have had gonorrhea twice. These are the Copenhagen figures, and they represent the facts among the middle classes of a large city, but they indicate as well, though they may not represent mathematical accuracy, the dimensions of this disease even in conditions and communities different from the ones studied by Blaschko. Even then, when we have eliminated the undoubted cases of non-specific prostatitis (due to traumatism, catheterism, cystitis, non-venereal infections, etc.), it is very obvious that the vast majority of men who attain to years will have a chronically-inflamed prostate, and in the vast majority of these the original infection will have been gonococcal.

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*This view was later ardently defended by White, arguing from a false prostato-uterine analogy and the implied power of a no longer functioning testicle to express misdirected physiological energy in prostatic hypertrophy.

The falsity of the so-called prostato-uterine analogy and the fact that an enlarged prostate is adeno-fibromatous, and not fibro-myomatous, make this theory untenable.

It is next necessary to study the histological changes in the chronically-inflamed prostate to see if they agree with the conditions found by Ciechanowsky in the hypertrophied prostate. And this Rothschild has done. He finds, without detailing his description (studying cases in which all history or macroscopical evidence of lesion of the urinary channels could be excluded), that the pathological picture agrees not only with Ciechanowsky's account of the pathology of hypertrophy, but with Finger's account of the pathology of gonorrhea, and concludes that the "anlage" of prostatic hypertrophy is laid down in youth, years before the gland begins actually to enlarge. The similarity of such a slowly-developing histological change to the formation of urethral strictures—itself a well-recognized gonorrheal sequela—makes a similar etiology for the two conditions somewhat more probable, as does also the frequent occurrence of an obliterated vas deferens in both conditions. Rothschild's reasoning, then, is, in brief, as follows: Chronic prostatitis (most often, though not necessarily, of gonorrheal origin) occurs in so large a proportion of men that we may almost assume its existence in every prostatic; the chronically-inflamed prostate has the same microscopical appearance as the hypertrophied prostate; the two conditions are often accompanied by obliteration of the vas deferens, and the occurrence of a slow fibrous change following long after the acute process is shown to be a possibility by the actual occurrence of urethral stricture. Hence prostatic hypertrophy is a later manifestation of prostatic inflammation, and therefore is most often a *gonorrhea tarda.*

So much for the pathological side of the question. We have next to ask, which way does the *clinical* evidence point? The answer Keyes has attempted to give, and he finds the evidence to point, so far as it warrants *any* conclusion, against rather than in favor of the inflammatory theory. A series of 433 cases of hypertrophied prostate was analyzed, and 26 found with a definite history of previous prostatitis. In only 18 of these was hypertrophy great and causing marked symptoms; that is to say, less than 5 per cent. of over 400 patients suffering from enlargement of the prostate showed clinical evidence of previous prostatitis. The second series studied consisted of 54 cases of chronic posterior urethritis followed to an age varying from 50 to 83, in which no hypertrophy developed. In 32 of these patients treatment (for the existing stone, gonorrheal prostatitis or stricture) abolished all symptoms, and the absence of hypertrophy was therefore inferred. In the 22 others operation was done and the absence of hypertrophy proven by palpation. More striking, however, is the proportion of the cases of hypertrophy at any given age to the total number of cases of all kinds seen during this period and a comparison of this figure with the proportion of hypertrophied prostate cases presenting clinical history or evidence of chronic prostatitis. Of 2164 cases studied at their fiftieth year, 425 (19 per cent.) showed prostatic hypertrophy; 71 gave a history of chronic prostatitis, of which 17 (24 per cent.) showed prostatic hypertrophy. In other words, the influence of a pre-existing prostatitis in causing the prostate to hypertrophy is certainly not a great one, otherwise the urethritis cases would present a much larger proportion* of hypertrophied prostates than the general cases.

In attempting any critical estimate of the evidence thus produced by Ciechanowsky, Keyes, and Rothschild there are certain obvious points to be kept in mind. In the first place, it is clear that hypertrophy is certainly not a necessary or a constant result of gonorrhea, and that the latter cannot therefore be considered the cause of the former in the sense that the occurrence of one always means the development of the other. This is obvious from the fact that, as Keyes puts it, "there are not enough hypertrophied prostates to go round." Nor is there clinical evidence to show that gonorrhea is the *predisposing* cause of hypertrophy in the sense that the gonorrheal prostate is more likely to enlarge than the one which has never been infected, for a study of the incidence of the condition in gonorrheal and non-gonorrheal cases shows no marked difference between the two series. Moreover, it is a striking fact that hypertrophy occurs, not at any age, but at a definite period of life—roughly the "climateric"—and any attempt at explaining the disease by making it a late result of inflammatory conditions must take some adequate account of this remarkable uniformity in the date of onset. There seems to be little doubt that often the enlarged prostate is also an inflamed prostate, but to assume that it is therefore a gonorrheal prostate seems to us to miss the whole point of the debate. Ciechanowsky has apparently overlooked entirely the fact that an *accompanying,* but not therefore a *causative,* prostatitis is just what should be expected in these patients, for a large majority of them, either from catheterism, accompanying stone, or retention, have an infection of bladder (and posterior urethra?), and this in itself—lasting, as it does, often for years—must give rise to an inflammatory prostate.

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*At 60 years of age the proportion of patients with prostatic hypertrophy to the general cases is represented by 39 per cent., while of the urethritis cases only 33 per cent. showed hypertrophy. At 70 years the figures were 52 per cent. and 27 per cent.

On the other hand, in criticism of Keyes' findings, it is to be said that figures of this sort are not, after all, the most satisfactory things imaginable, for the existence of prostatitis is often overlooked, and the presence of hypertrophied prostate in the absence of symptoms is not always easy to detect without cystoscopic examination, of which Keyes makes no mention. Keyes' first statistical table invites a challenge. Of 433 cases of prostatic hypertrophy, only 26 were preceded by chronic urethritis. Now, if we accept Keyes' own figures, 75 per cent. of all males have gonorrhea, and 60 per cent. of these have posterior urethritis. In other words, of a series of 433 cases the presumption is (unless prostatitis actually protects from hypertrophy) that, roughly, 194 have had posterior urethritis, and I do not see how we can escape the conclusion that in this particular series many cases of prostatitis have been overlooked, though the well-known fact still remains that, clinically, prostatic hypertrophy is not often associated with history or evidence of chronic urethritis. The problem is, indeed, no uncomplicated one. Roughly, seven out of every ten men who pass the fiftieth year have had gonorrhea. Of this same group three will carry an uninfected and unenlarged gland past the midcentury mark, and only two will develop prostatic hypertrophy. It is obvious, then, that in the remaining five, all of whom have had gonorrhea, the absence of subsequent hypertrophy is a mystery as yet without explanation on any theory of its gonorrheal origin, unless (and this is a point to be borne in mind) the frequency of enlarged prostate has been underestimated, so long as symptoms and rectal examination alone were relied on, and the disease be found, by careful cystoscopy, to be present in a much larger proportion of middle-aged males than has previously been thought to be the case. Certainly, we stand badly in need of clinical evidence based on the most careful observations and cystoscopic examinations, and until these are accumulated nothing can be said from the clinical side except that the obviously unsatisfactory testimony we possess does make it improbable that early gonorrhea is the cause of the condition. From the pathological side, to have shown the association of inflammation with enlargement was by no means to have demonstrated the etiology of hypertrophy. It is first necessary to exclude other causes of the inflammation, which may itself be an accompaniment, or even sequel, of the hypertrophy—causes which are obviously often present in the shape of catheterization, retained urine, and vesical calculus.

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The history of the views that have been held as to prostatic hypertrophy is well detailed in the text-books of Lydston and Keyes. Rothschild has reported his own work in the *Centralblatt für die Krankheiten der Harn- und Sexual-Organe* (Bd. XV, Hft. 4), and Keyes has outlined the work of Ciechanowsky in presenting his own clinical report (*Journal of the American Medical Association,* July, 1904).

Current Literature

REVIEW IN GENITO-URINARY SURGERY.

Under the Supervision of Hugh H. Young, M.D., of Baltimore, Assisted by J. T. Geraghty, M.D.

SECONDARY MANIFESTATIONS OF HYPERNEPHROMATA. Walter L. Biering, M.D., and Henry Albert, M.D. *Journal of the American Medical Association,* July 23, 1904.

A hypernephroma is a tumor of adrenal structure derived from the suprarenal gland or from the misplaced portions of this gland. Adrenal inclusions in the substance of the kidney are not uncommon, and have also been described in other organs.

Hypernephromata are of rather frequent occurrence, many tumors of this type not being recognized, due to lack of a pathological examination.

There was a great deal of discussion as regards the origin of these tumors until Grawitz, in 1883, discovered their real nature.

It is more common in individuals beyond middle life and of greater frequency in males than in females. The malignancy of these tumors varies a great deal, some attaining great size without evidence of metastases, while others are exceedingly malignant. Microscopically, the picture is the same in both. It would seem that tumors arising from the adrenal itself are of a more benign type than those originating in misplaced portions of the gland. The hypernephromata are soft and smooth, and on section present large areas of hemorrhages, due to vascularity of the tumors, with here and there areas of softening and sulphur-yellow foci.

Microscopically, they are principally of adrenal structure. Two varieties are recognized—the cortical and the medullary, according as the tumor follows more closely the cortical or medullary structure of the adrenal. Sometimes both types are present. Metastases from hypernephromata occur most frequently to the lungs, liver, and bones. Extension takes place through the blood-vessels, through the lymphatics, by implantation in peritoneal cavity or along the urinary tract. Extension through the blood-vessels is the most common method of distribution, the renal vein taking by far the most active part, due to the fact that it is so frequently involved. Absence of renal-vein involvement is of value in prognosis. Extension through the lymphatics is of rare occurrence, but there are cases reported which indicate that it undoubtedly occurs. When hypernephromata extend into the peritoneal cavity small portions may become detached, and thus lead to multiple secondary-tumor formation by implantation.

The pelvis of the kidney and the ureters are frequently involved, but no cases of implantation lower down in the urinary tract have been reported, although the possibility of such a thing is conceivable.

The examination of the urine might lead to the diagnosis of the nature of the tumor in some cases, especially those in which the neoplasm extends down into the ureter, particles of tumor being voided in the urine. The secondary growths of hypernephromata present the same characteristics both macroscopically and microscopically as the primary growths from which they are derived. Those from a cortical hypernephromata reproduce a cortical type, and those from a medullary hypernephromata a medullary type of tumor.

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REPAIR OF THE URETHRA BY TRANSPLANTATION OF THE URETHRA OF ANIMALS. J. Hogarth Pringle, M.D. *Annals of Surgery*, September, 1904.

The writer reports some astonishing results in two cases where portions of the urethra of bullocks were transplanted to repair injuries to the urethra, and in one case of hypospadias where the whole penile portion of the urethra was absent.

These results open up a satisfactory method of treatment for these most lamentable cases.

Portions of bullock's urethra varying from 5 to 13 centimeters were successfully implanted. The penile urethra of a freshly-killed animal was dissected out in each case, leaving some of the alveoli of spongy tissue attached.

Case 1. Patient, aged 51. Admitted with rupture of the urethra and extravasation of urine of some days' duration. The perineum was freely incised, but as it was impossible to find the proximal end of the urethra a suprapubic cystotomy was necessary. Soon afterwards the corpus spongiosum from the triangular ligament to within 5 centimeters of the meatus was found completely gangrenous, and the sloughing tissue was cut away, leaving only the prostatic portion of the urethra at one end and a portion 5 centimeters long at the other.

Six weeks later a portion of a bullock's urethra 13 centimeters long was implanted to fill up the intervening gap, the ends of the urethra being sutured to the graft. The wound was closed and healing was entirely per primam, except at the junction of the graft with penile urethra, where a fistula developed. Three weeks later a No. 6 English bougie passed with ease into the bladder. Subsequent attempts to close the fistula were unsuccessful.

In the second case following a severe perineal injury, with rupture of the urethra and subsequent infection, a gap of 5 centimeters was found between the two ends of the urethra. To supply this defect a procedure similar to that used in the first case was adopted, about 5 centimeters of a bullock's urethra being implanted. The healing was per primam, except at one small point behind the scrotum, where a small fistula developed.

The third case was one of hypospadias in a boy, aged 14 years, in whom the whole penile portion of the urethra was absent. A perineal fistula was first made, and, after preparing the penis, 7 centimeters of a bullock's urethra was grafted. The distal end was sutured to the edges of an incision in the glans. With the exception of the juncture of the urethra and graft the healing was perfect, and the patient left the hospital soon afterwards, refusing further treatment. On returning some months later it was found that the meatus had closed and the urine was voided through the perineal fistula.

A second operation was done, the old cicatrix being removed and 9 centimeters of a bullock's urethra again grafted. As in all the other instances the graft took perfectly with the exception of the point of union with the urethra. This fistula was successfully closed later, and now the patient voids urine entirely through the urethra, which admits a No. 6 English bougie.

This procedure appears to be especially promising in the treatment of hypospadias, as apparently almost unlimited lengths of graft can be implanted.

Again, a true urethral tube is supplied which has considerable advantage over the skin flaps usually employed. Furthermore, the whole procedure can generally be done in one operation.

Pringle selected the urethra of a bullock on account of its caliber, one of small caliber not being desirable.

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BACTERIURIA. Edward L. Keyes, Jr., M.D. *New York Medical Journal*, August 27, 1904.

Bacteriuria is a condition of the urine of considerable interest, but one not very well understood. It was first described by Roberts in 1881. He noted that the urine in these cases had an opalescent appearance, due to swarms of bacteria; that it was nearly always acid, and of a disagreeable odor. There was absence of pus from the urine.

Urethritis, prostatitis, and catheterism may be mentioned as causes of the infection, but descending infection of the urine from the kidney is the rule. Typhoid bacteriuria, which occurs in 20 to 30 per cent. of all typhoid-fever cases, is undoubtedly of renal origin.

It is not possible to explain the presence of myriads of living virulent bacteria in the urine without some inflammatory basis.

Dr. Keyes considers that the evidence, though not conclusive, is in favor of the existence of a parietal lesion, and that it is often in the pelvis and calices of the kidney. Out of a series of over 50 cases reported by Jeanbrau all except two gave a history of some active disease of the urinary organs within a few weeks of the time that bacteriuria set in. No cases of typhoid are included in this series. If we grant the existence of a parietal lesion, the explanation of bacteriuria is quite simple. It is the clinical sign of inflammation somewhere in the urinary tract, and it is a symptom, not a disease. The determination of the position of the lesion is not always possible. That the lesion is not in the bladder in bacteriuria is generally granted.

The prostate and seminal vesicles are sometimes at fault. One sees not uncommonly bacteriurias of a few days' duration in patients with a chronic prostatitis. These cases are difficult to interpret.

There are occasional cases of surgical inflammation of the ureter and kidney where the picture is that of bacteriuria. Pus may be entirely absent from the urine.

Typhoid bacteriuria is an acute catarrhal pyelitis. The condition may persist for years, leading to structural changes of the kidneys, and also serving as a great source of danger to the health of the community.

Puerperal bacteriuria has received very little attention, although Dr. Keyes considers it not very uncommon. The cases which he has seen presented symptoms of an acute pyelitis.

Finally, there is a large class of cases of chronic catarrhal pyelonephritis in which bacteriuria is a most important feature. Such are the prostatic and stricture cases of long standing.

The assumption that in bacteriuria there is always present somewhere in the urinary tract a parietal lesion, while it has many clinical facts in accord with it, is nevertheless an assumption based mostly on theoretical grounds. There are cases of bacteriuria in which absolutely no etiological factor can be found.

[The reviewers have frequently seen cases of bacteriuria in patients under treatment for chronic prostatitis. The etiology in these cases seems plainly due to an infection of the vesical urine from the prostate.

In our experience it has nearly always occurred after prostatic massage, by which the purulent contents of the inflamed prostate are expelled in the urethra, some escaping through the meatus and some flowing back into the bladder. In all these instances we found the same bacterium in the prostatic secretion which was present as the infecting agent in the bacteriuria—in most cases one of the colon group of bacilli, but in some cases a staphylococcus. .

The invasion of bacteria always appears suddenly in urine which had heretofore been perfectly sterile, and was characterized invariably by the great numbers of organisms present and a complete absence of pus cells. The picture is almost identical with that of an abundant bouillon culture of the organism.

The vesical infection was nearly always eradicable by a few days of vigorous treatment by irrigations of bichloride of mercury, urotropin being administered internally. In one noteworthy instance the infection (a staphylococcus) remained after several months of very vigorous treatment. There were never any pus cells produced, and the urine was often so clear that it was almost impossible to believe the presence of cocci, which a stained centrifugalized specimen would show. In only one case did the infection set up a cystitis, with pyuria, etc., but in this case it was impossible to cure it.

The frequent presence of bacteria, bacilli, and cocci in chronic inflammations of the prostate makes it extremely important that antiseptic vesical irrigations always be employed after prostatic massage and also after instrumental dilatation of the prostatic urethra. By following this plan for the last five years we have rarely had any trouble from these ascending bladder infections, but their occasional occurrence shows the necessity of great care and the importance of examining all urines which have suddenly become cloudy while the patient is under treatment to see if a bacteriuria has been produced.—EDS.]

IN summing the matter up, it seems as if life and health were given us as a trust, and we cannot but be answerable for their proper use—answerable to our families if by any known available means we can prevent ourselves from becoming either useless or burdensome; answerable to society if through any neglect or indifference of ours we fail to take our share in the work of life about us. It is a distinct injury to society when we cease to do our own work, and we become still more injurious when, for any reason, we cause others to care for us.—*Nutting.*

A THOUSAND years a poor man watched
Before the gates of Paradise;
But while one little nap he snatched,
It oped and shut. Ah! was he wise?

—*W. A. Alger.*

REVIEW IN PEDIATRICS

Under the Supervision of José L. Hirsh, M.D., Baltimore.

ANALYSIS OF 118 CASES OF LOBAR PNEUMONIA IN INFANCY. John Lovett Morse. *American Pediatric Society Medical Record,* September 10, 1904.

Morse gave the following summary: Lobar pneumonia is more common, and occurs relatively more frequently in comparison with broncho-pneumonia in infancy than is generally supposed. The analysis of these cases shows the following points: The onset was less stormy than was generally supposed. It was often entered in by vomiting, but rarely by a convulsion. It usually began with fever and cough, which were often accompanied by apathy or drowsiness. Movement of the alae nasi was not a constant symptom. A whole lobe was more often involved than a part. The left lower lobe was the one most frequently involved. The right upper and the right lower lobe came next in frequency. The portion of the lung involved was relatively the same in the fatal cases as in those which recovered. As a rule, the area involved was larger in the fatal cases. The average duration of the fever in the cases that recovered was about eight days, being nearly the same in both years. The course was more often short in the first year, however, than in the second. The average duration of the fever in the uncomplicated cases that were fatal was 12 days—that is, the duration of the fever was longer in the fatal cases than in those that recovered. The highest temperature was usually between 103° and 106° F., the number of cases being nearly the same for each degree. The temperature fell by crisis in 68.8 per cent. Crisis was less common in the first than in the second year. Collapse during the crisis was very unusual. Pseudo-crisis was not very common, but irregularities and remissions in the temperature were not at all unusual.

The mortality was lowest when the temperature did not rise above 103° F., and highest in those cases in which it went over 106° F. The degree of fever between 103° and 106° F. had no apparent effect on the mortality. A high temperature was no more fatal in the second year than in the first year. The usual pulse rate was between 150 and 170. No case died in which the pulse was not over 140. The rate of the pulse when it was above 140 had little or no apparent effect on the mortality. The usual respiratory rate was between 55 and 80. No patient died whose respirations were below 55. The rate of the respiration when above 55 had no apparent effect on the mortality. The mortality, excluding the cases in which death was due to empyema, was nearly 23 per cent. It was almost twice as great in the first as in the second year, being 32 per cent. and 18 per cent., respectively. Otitis media was the most common complication, occurring in 18 per cent. Empyema was the next most frequent, occurring in about 8 per cent.

The prognosis of lobar pneumonia in infancy varied decidedly with the age of the patient and to a certain extent to the amount of lung involved. The prognosis was good when the temperature was not over 103° F. It was serious when it was above 106° F. Variations between these points made little or no difference in the prognosis. The prognosis was good when the pulse was not over 140 or the respirations over 55. The amount of the increase above these limits was of little importance.

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THE BACTERIOLOGY OF MEASLES. Zlatogoroff. *Roussky Vratch.*, July, 1904; *New York Medical Journal,* August, 1904.

The author investigated the secretions of the eyes, nose, and blood of 30 patients with measles. He found that the best time for making cultures was at the acme of the disease when the eruption was marked and the temperature high. The media used included the ordinary nutrient substances with glycerine, and also special media prepared from fresh human placenta or fresh human lungs. Only the two last-named special media were found to be effective. Cultures from the nose gave a great variety of germs; among which a bacillus resembling that which occurred in the blood was isolated but once. The secretion from the eye showed the bacillus xerosis, and of another bacillus resembling it, but smaller. The latter was not very active, did not grow readily on culture media, was stained by Gram's method, was non-motile, did not form spores, and was not markedly pathogenic in animals. The most satisfactory results were obtained on examining the blood. In 17 out of 24 cases a bacillus was isolated in pure culture from the blood, was stained with analine dyes and with Gram's method, was slightly motile, and usually occurred in pairs or in groups. The germ had rounded ends, which often stained better than the middle portion, and was not over 0.7 microns in length. Cultures made from the blood of healthy persons or of persons suffering from other infectious diseases never showed the presence of this germ. The author was not sure that the bacillus found in the blood was identical with that found in the secretions from the eyes and nose, but believes that the germ found in the blood will turn out to be the specific germ of measles.

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THE CLINICAL FEATURES OF CEREBRO-SPINAL MENINGITIS, OR CEREBRO-SPINAL FEVER OF THE EPIDEMIC TYPE. Henry Koplik. *Medical News,* June 4, 1904.

In this study the author has utilized 77 cases of meningitis, 37 of which were of the epidemic type; 35 cases were of the tuberculous form of meningitis, as substantiated by post-mortem or by guinea-pig experiment or by discovery of tubercle bacilli in the lumbar-puncture fluid. One case was a so-called staphylococcus meningitis, one case primary pneumococcus meningitis, one case streptococcus meningitis; in two cases so-called pseudo-influenza bacilli were found.

The ages of the patients with the epidemic form show that this is a disease of young people. Sixty per cent. of the cases were under two years of age, the youngest being four months, the oldest 14 years. In tuberculous meningitis only 41 per cent. of the cases were under four years of age.

The bacteriological features of the cases show that there is one type of the diplococcus meningitis in the New York cases of cerebro-spinal meningitis. This type corresponds to that found by Councilman and Wright in Boston, and Osler and Hirsh in Baltimore, and Herricks and others in Chicago.

In most of the author's cases the onset of the disease was abrupt. The child, in apparent health, would be suddenly taken with nausea, vomiting, and fever, thus differing from the tuberculous type, in which the onset is rather slow.

There are some cases in which neck-rigidity is not present at all times, but if observed closely some rigidity was found at one time or another in all cases observed by Koplik. Opisthotonos is present in about 70 per cent. of the cases.

The Babinsky reflex was found present in only four of 25 cases studied, though it was present in 77 per cent. of the cases of tuberculous miningitis, and the author considers the presence of this reflex as a valuable addition to the clinical picture of tuberculous meningitis as distinguished from cerebro-spinal meningitis of the epidemic type.

The writer does not lay much stress on the presence or absence of Kernig's symptom as a pathognomonic sign of meningitis either of the epidemic or tuberculous type. Hyperesthesia is more apt to be present in the epidemic than the tuberculous form.

MacEwen has pointed out that in children in various forms of meningitis we obtain on percussion a hollow note over the anterior horn of the ventricle. If the head is so held that the anterior frontal or parietal bone may be percussed over the situation of the anterior horn of the ventricle, this note will be produced; that is, if the patient sits upright and the head is inclined to one side, percussion of the inferior frontal or parietal bone will give a tympanitic note. The writer found this sign present in 11 of 17 cases of tuberculous meningitis, but in only two of 13 cases of the epidemic variety. The difference in the two conditions is probably due to the fact that in the tubercular form there is a greater increase in the amount of fluid in the ventricles.

In the majority of cases of epidemic meningitis examination of the fundus of the eye revealed but little change in the optic papilla, although in some there was dilatation of the veins or congestion without neuritis. In only one case was there a descending neuritis. In a group of 26 cases of tuberculous variety there were some changes found in 77 per cent. of the cases. This change consisted of an optic neuritis, or a pappilitis, or the presence of tubercles in the choroid. In all the cases of the epidemic variety there was a leucocytosis to some extent. The leucocytosis was of the polynuclear variety, ranging from 20,000 to 50,000. A prognosis as to the recovery or fatal issue cannot be made from the leucocyte-count alone without taking into account the duration of the disease and the character of the lesion as revealed by clinical methods of precision. The cytology of the fluids obtained by lumbar puncture in cases of cerebro-spinal meningitis is of particular interest as regards the possibility of making a diagnosis from the elements found in the fluid alone, apart from the bacteriology. In the majority of the cases of the epidemic type the lumbar fluids present a polynuclear leucocyte picture. The tubercular type shows a prevalence of the mononuclear cells. The physical characteristics of the fluid obtained by lumbar puncture aid but little in coming to a conclusion as to the form of meningitis present. In the epidemic variety the writer has obained clear fluid; again, cloudy, varying to the purulent fluid; whereas in the tuberculous form the fluid was clear in 72 per cent. of the cases, but was quite cloudy in the others.

In all the epidemic forms the *diplococcus meningitidis* was found at one time or another in the puncture fluid. The earliest period at which the organism has been found was within 24 hours after the onset of the disease, and it has been found as late as the fifteenth week of the disease.

As to the discovery of the tubercle bacillus in tubercular meningitis, the author is of the opinion that if it is sought after long and carefully enough it can be found in all cases. In 14 cases diagnosed clinically as tubercular meningitis the tubercle bacillus was found in the fluid in 13 cases.

Koplik discusses at some length the value of lumbar puncture as a curative agent. While the procedure cannot be relied upon as curative, it seems to be beneficial in relieving pressure. The injection of chemicals or antiseptics has in no way lessened the mortality, which amounted to about 35 per cent. in the number reported by the writer.

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The Treatment of Cerebro-Spinal Meningitis by Intraspinal Injection of Lysol. Manges. *Pediatrics*, Vol. XVI, 1904; *Therapeutic Review*, August.

The author reports three cases of cerebro-spinal meningitis treated by the intraspinal injection of lysol, all of whom recovered. The mortality of cerebro-spinal meningitis has been so high, and the various forms of treatment that have been tried have been so useless, that the introduction of a method of treatment which offers some hope of influencing the progress of the infection is one that should attract much attention. The treatment of meningitis by the injection of lysol was first introduced by Seager, who treated 31 cases of the epidemic type of the disease, of which 18 recovered. The technique employed by Seager consisted in making a lumbar puncture and withdrawing by aspiration various quantities of cerebro-spinal fluid from the spinal canal, frequently amounting to 50 c. c.; artificial serum is then injected with the same syringe, the needle being *in situ*, and the surrounding parts are washed with serum; lastly, a quantity (from 9 to 12 c. c.) of 1 per cent. solution of lysol is injected through the same instrument and the needle withdrawn. The temperature falls immediately, but rises again after one to three days, when the puncture and injections are repeated, and so on until a quite clear and limpid fluid is withdrawn after the puncture, when the injection of lysol is stopped. Afterward a few punctures are made to see if the liquid continues clear. Of the three cases treated by Manges with this method, one was a meningococcus infection and the other two streptococcus infection. Of the first case he says that the patient was rapidly failing, and there was every reason to suppose the case would end fatally. Of the streptococcus cases, he says that all other cases of cerebrospinal meningitis depending on the presence of the streptococcus which he had seen at the Mt. Sinai Hospital have ended fatally, and there was no reason to suppose that these cases would prove any exception to the rule. The technique practiced by Manges differs slightly from that of Seager, in that he omits flushing the spinal canal with normal salt solution. He injected a 1 per cent. lysol solution through the puncture made immediately after withdrawing a slightly greater quantity of the cerebro-spinal fluid. For example, in a child of 10 years in whom lumbar puncture had been previously practiced he withdrew 9 c. c. of cerebro-spinal fluid and injected 6 c. c. of a sterilized 1 per cent. solution of lysol. Ordinarily, treatment is not painful, and general anesthesia is not required. In one of his cases, however, the child was so restless and hyperesthetic that a light degree of narcosis was produced with chloroform. The quantity injected in one treatment varies from 3 to 9 c. c. for children and from 12 to 15 c. c. for adults. The injections should be repeated daily until the spinal fluid is no longer torbid.

NATURE will be reported. All things are engaged in writing their history. The planet, the pebble, goes attended by its shadow; the rolling rock leaves its scratches on the mountain; the river, its channel in the soil; the animal, its bones in the stratum; the fern and leaf, their modest epitaph in the coal; the falling drop makes its sculpture in the sand or the stone. Not a foot steps into the snow or along the ground but prints, in characters more or less lasting, a map of its march.

Society Reports.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

SEMIANNUAL MEETING HELD AT OCEAN CITY, MD., SEPTEMBER 9 AND 10, 1904

(Continued from Last Month.)

Dr. Harry C. Hyde: "The Pathology of Nephritis." Dr. Hyde said that the term nephritis is very loosely applied to a number of conditions which are revealed by urinary examinations, and associated with more or less definite pathologic changes in the kidneys, but which may not with strict propriety be considered as diseases of the kidney, since very often the kidney changes form but a feature of general pathologic alterations throughout the body. Very often the kidney disease which forces itself upon the physician's attention is but a part of a general disease, and the use of the term nephritis is likely to limit one's practical dealing with the clinical problem.

In the absence of definite knowledge concerning the etiology of the several kinds of nephritis, and while the physiology of the organ is so imperfectly understood, a satisfactory classification of the kidney diseases is impossible. The question raised long ago by Brown-Sequard as to whether the kidney produces an internal secretion has not yet been settled, although a great deal of experimental work has been done on the subject. We know that the kidney is much more than a filtering organ, but we do not know how its work of elimination is controlled. Some of the influences affecting the urinary output are known, and among them are two internal secretions, that of the suprarenal gland, which diminishes, and that of the thyroid, which augments the flow of urine. The amount of water flow is not proportionate to the amount of true kidney substance, for when part of the kidney substance is lost the remainder often more than compensates in activity for the portion lost. There is clear evidence of a strong selective faculty in the renal epithelium, for it passes a disproportionately large amount of some substances, as urea, and resists the elimination of other substances, as sugar, even when present in the blood in large amounts. The function of the renal epithelium is easily impaired by the presence in the circulating blood of certain drugs, as lead, arsenic, mercury, cantharides, turpentine, ricin, abrin, etc. Besides these, many organic substances elaborated by micro-organisms in the human body, or present in ingested food, or produced by the metabolism of the body itself, have an injurious effect upon the structure and functions of the kidney. Specific cell poisons for kidney cells (nephrolysins) have been produced experimentally, and definite evidences of kidney disease are caused by injection of these cytotoxin serums into animals. There is also good reason to believe that the cells of the body itself may under certain conditions produce similar cell poisons (autonephrolysins). Along these lines we may eventually come to understand the relations of kidney diseases to the infectious diseases and to other frequently associated disorders, as anemia, tuberculosis, circulatory disorders, tonsilitis, extensive skin lesions, pregnancy, and the purpuric affections.

Dr. Hyde then described the pathology of the various forms of nephritis.

Dr. Edward N. Brush: "Nephritis as a Factor in Mental Disease." Nephritis might be expected to have a demonstrable influence upon the origin, progress, and termination of mental diseases, but the observed facts do not show any such influence. According to certain classifications of mental diseases, nephritis might appear as a cause of insanity, but a rational classification of mental diseases, now generally accepted, puts an end to our former misconceptions concerning the nature and varieties of mental disease. We have lately strengthened our grasp on an idea by no means new, though lately made vital, namely, that insanity is not disease, but symptom. The relations of renal disease to insanity are symptomatic. Forms of mental diseases are found in relation with arterio-sclerosis and renal insufficiency. For example, a man may have first a period of indefinitely-impaired health, during which he considers himself merely below par; then may follow a period of introspection and self-examination; next he may become despondent. Mental confusion at length excites the attention of friends, and in this condition he may be brought to the hospital for mental disease. At the hospital such a patient is anxious, perhaps suspicious, but he is not depressed as a case of advanced melancholia, and he has not systematized delusions, as in paranoia. Mental confusion is the leading symptom, and such a patient may die in the hospital of chronic interstitial nephritis.

Alienists need the assistance of general practitioners in studying the early symptoms of all forms of mental disease, for the clinical picture is often fully defined before the patient is presented to the alienist. Nothing can be more important for those who have started in the obscure and often long route towards insanity than to be in the care of physicians who can recognize danger signals promptly upon their appearance.

In patients having depression, hypochrondria, mild suspicion, slight mental confusion, careful study of nutrition and of the excretions may enable one in some cases to avert disaster.

Dr. Herbert Harlan: "The Eye Complications of Nephritis." The retinitis associated with kidney disease is not uncommon, and is by far the most important of the eye complications. The time of onset is most irregular. Sometimes albuminuric retinitis is the first symptom noted; in other cases it may be one of the latest symptoms. For instance, a policeman, aged about 30, believing himself in perfect health, except that his vision was slightly impaired, was found to have the characteristic retinitis of Bright's disease, and he died 14 months later. Here failing vision was the very first sign of which a man was made aware that he was sick, though he had, in fact, been sick for a long time.

In another instance a young married woman, after suffering intense headaches for two and a-half years, during which time she had one severe illness, developed an albuminuric retinitis, and died of Bright's disease 11 months later. It is rare that a nephritic lives two years after nephritis appears.

The knowledge that kidney disease is often accompanied by eye disease is widespread among the people, and it is quite common after an examination of the eyes to be asked, "Are my kidneys all right?" It is also quite common for ophthalmologists to urge general practitioners to familiarize themselves and to keep familiar with the use of the ophthalmoscope; but after having given a great deal of such advice myself, and seen some general practitioners try to become proficient in ophthalmoscopic examinations, I believe it is extremely difficult, if not impossible, without daily practice, to have any practical skill in the examination of the eye-grounds.

The albuminuric retinitis of pregnancy is most important. It is always grave and often of fatal significance. On the appearance of marked retinitis in a woman pregnant six months or less, interference is always demanded. Later than six months one may sometimes temporize, but the danger to vision and to life should be kept constantly in mind.

Dr. Jeffries Buck: "The Nephritis of Infectious Diseases in Children." Nephritis in childhood is very rarely caused by exposure to cold. Toxic nephritis of one sort or another is the nephritis of childhood. Nephritis seldom follows variola, measles, rubella, or whooping-cough. It sometimes follows influenza, chicken-pox, dysentery, and summer diarrhea. It is common after diphtheria and scarlet fever.

The onset of nephritis in cases of diphtheria may be so masked by the primary disease that it may be overlooked. There is no extensive edema as in scarlatinal nephritis, and the complication is less grave than in cases of scarlet fever. The use of antitoxin is the best prophylactic against nephritis, as against the other complications of diphtheria.

The nephritis of scarlet fever is a very important disease. Some epidemics are characterized by complicating nephritis in as many as 70 per cent. of cases; in other epidemics no more than 5 per cent. of cases may have nephritis. The occurrence of nephritis is not dependent upon the severity of the scarlet-fever attack, but is as apt to follow very mild as very severe cases. Sometimes the origin of a case of nephritis may be explained by looking for signs of recent desquamation, for an attack of scarlet fever may have been so mild as to escape notice. Sudden rise of temperature in a child convalescent from scarlet fever should always raise the suspicion of nephritis.

Nausea and vomiting are early symptoms of scarlatinal nephritis. In severe cases complete anuria may occur. If it persist for 48 hours, it is usually fatal. The edema and general anasarca of scarlatinal nephritis are characteristic. Abdominal and pleural effusions are not uncommon.

Authorities differ as to the prognosis, but it is certain that grave cases of scarlatinal nephritis should not be given up. Those symptoms which are of such fatal significance in the nephritis of adults, such as total anuria, uremia, and convulsions, are borne much better by children.

THE golden age is yet to come. The golden opportunity to work comes every day.—*Selected.*

Book Reviews.

TUBERCULOSIS AND ACUTE GENERAL MILIARY TUBERCULOSIS. By Dr. G. Cornet of Berlin. Edited, with additions, by Walter B. James, M.D., Professor of the Practice of Medicine in the College of Physicians and Surgeons (Columbia University), New York. Handsome octavo volume of 806 pages. Cloth, $5 net; half-morocco, $6 net. Philadelphia, New York and London. W. B. Saunders & Co.; Baltimore: Medical & Standard Book Co., 3 West Saratoga street. 1904.

A good English translation of Cornet's great book is a very valuable offering to the medical profession of this country. The present volume is the seventh of the series, and is not excelled in interest or value by any of its predecessors. The editor, Walter B. James, has very wisely adhered strictly to the text of the German edition, and presented the views of Cornet without modification or criticism. This is not to say, however, that the American edition has not been brought up to date. The editorial additions include every important increment of knowledge down to the end of the year 1903. The fresher matter is clearly distinguished from the original matter of Cornet. Some of Cornet's views, particularly those concerning the *rôle* of dried tubercle bacilli in the transmission of tuberculosis, have lost somewhat of their force in recent years. The work of Cornet had, indeed, a tremendous influence both upon popular and professional opinion. It happened in this case, as in so many others, that the views of the author passed into current belief with a largely exaggerated significance, and it is a pleasure to learn from a book just off the press how much nearer to truth and reasonableness Cornet's own statements appear than are the views commonly held upon his authority.

The statistics of the subject as presented by Cornet form a body of varied and interesting data not surpassed in any study of the subject from any source.

The chapter upon treatment is eminently satisfactory, and has been brought by the editor quite down to date and adapted to the needs of the American practitioner. Other editorial additions deserving particular mention relate to the biochemistry of the bacillus, to immunity, to the interrelations of human and animal tuberculosis, to latency of tuberculosis, and to prophylaxis. A very voluminous bibliography of the subject and a good index close the volume.

A feature of this series which will be most welcome to many physicians is the fact that each volume can be purchased separately.

EPILEPSY AND ITS TREATMENT. By William P. Spratling, M.D., Medical Superintendent of the Craig Colony of Epileptics, etc. Fully illustrated. Philadelphia and New York: W. B. Saunders & Co. 1904.

This very complete treatise on epilepsy and its treatment will be a valuable addition to medical literature, especially for the physician and neurologist.

The author in the last 10 years has had a vast amount of experience in studying all that is of interest and importance in this disease, having been medical director of the Craig Colony during this time. The book consists of 499 pages, with numerous illustrations, principally photographs. The chapter on the status epilepticus was written by Dr. L. Pierce Clark, and is of special interest, as are the chapters dealing on the relation of trauma to epilepsy, and the chapter dealing with the surgical treatment. In a study of 814 male and 509 female epileptics the author found trauma was the ascribed cause in 8.5 per cent. of the former and 3.5 per cent. of the latter. "The type of cases in which surgery most often fails to give satisfactory results, even when it is done at the proper time, *i. e.*, immediately after the receipt of the injury, are those in which the injury was a part of the cause only, often the minor part, the chief cause lying in the patient's strong epileptic predisposition. In many such cases the epileptic state is divided from the non-epileptic by a thin partition, which the injury destroys and which no operation can restore." Again he says: "As a rule, good recoveries are made from the operation when the patient's stamina is good and when he does not represent an epileptic ancestry. * * * Operate as soon after the receipt of the injury as possible. Never let a second convulsion follow the first, when due to injury, if it can be prevented by surgical intervention."

Complete bilateral resection of the cervical sympathetic as advised by Janesco seems to promise good results in some cases. Roswell Park performed this operation on three patients at the Craig Colony, and while sufficient time has not elapsed to note permanent results, improvement was noted in some respects immediately after.

The portion of the book which seems of greatest importance is the chapter on the medico-legal aspects of epilepsy. This phase of the disease must be more clearly impressed on the student and physician. So many criminal acts are committed by epileptics in a state of unconsciousness peculiar to this disease that, unless the physician is thoroughly familiar with this state of mental perversion, he may make grave mistakes in medico-legal questions. In fact, it is high time that the medical world should interest itself more in medico-legal subjects, especially the relation of epilepsy to crime. R. R.

A MAN'S strength should be like the momentum of a falling planet, and his discretion like the return of its due and perfect curve.—*Ralph Waldo Emerson.*

IT is not accident, then, that helps a man in the world so much as purpose and persistent industry. To the feeble, the sluggish, and purposeless the happiest accidents will avail nothing—they pass them by, seeing no meaning in them.

WHY has not man a microscopic eye?
For this plain reason: a man is not a fly.
Say: what the use, were finer optics given,
To inspect a mite, not comprehend the heaven?
—*Pope.*

MARYLAND MEDICAL JOURNAL.

JOHN S. FULTON, M.D., *Editor*.

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ROBERT REULING, M.D. | JOSE L. HIRSH, M.D.

BALTIMORE, NOVEMBER, 1904

COMPENSATORY STRAPTITUDE.

A FEW months ago a London undertaker, defending a suit for debt, pleaded the unprecedented slowness of his trade. More recently a Chicago doctor, in like predicament, pleaded the marvelous health of Chicago the superlative. In support of this defense he referred to the weekly bulletin of the Health Department, which indeed testifies that the health of Chicago has been growing more and more marvelous for many years. The marvelousness of Chicago's health is so old that the pleasures of marveling are somewhat stale, but the compensatory indigence of Chicago medicine men is full of novel interest, and the gentle public has been mightily amused by brutal cartoons of the medicine man's "straptitude."

Never was a city more boastful of her balance sheet of life and death. Unsatisfied with comparative excellence, Chicago the superlative must have contrast. Not long since Mayor Harrison invited all the world to admire, on one hand, the marvelous (always marvelous) effectiveness of sanitary administration, and, on the other hand, niggardly appropriations to the service of public health. Those who read the mayor's glowing words must have wondered what part of his picture concealed the "leveling circumstance" which, Emerson says, always "puts down the strong, the rich, the fortunate substantially on the same ground with all others." The debt-ridden medicine man has revealed it; Chicago's "supplemental asteroid" is compensatory straptitude. Progress and poverty, sanitation and "straptitude,"

"Mountain high and ocean deep,
Trembling balance duly keep."

How can the weekly bulletin of Chicago's health suitably acknowledge this tribute of praise from a noble profession impoverished that millions may have exuberant health and prosperity? The tensity of the situation is heartbreaking. Our esteemed contemporary, the *Journal of the American Medical Association,* speaking from the heart of Chicago, says that the good work must go on though every medicine man in town be brought to "straptitude." A noble sentiment, most noble, coming from Chicago, where that which was spoken of old by the prophets of hygiene is now being fulfilled.

If in one corner of the earth the healing art is now being extinguished by the progress of hygiene, medicine men elsewhere must consider the time remaining before they, too, must be sacrificed for the general good. Hereabouts we have appropriated much of the bounty of science to the prevention and cure of human suffering. We have witnessed the extinction of two diseases, both in their day great fee-producers, and we have given check to other maladies; our population has increased, and the tribe of medicine men has more increased; we are able to cure more people, and we are better paid for our cures; many men who find in medicine a gainful occupation never see a patient. Altogether we have done nothing marvelous, but we have cut a point or two from our general death-rate and from special death-rates several points. In Maryland this has come to pass without diminishing professional activity, while professional incomes have distinctly increased. We are convinced that our physicians and surgeons in private practice reap larger profits from the prevention of pus infections than an equal number of their predecessors derived from the cure of fifty-seven varieties of infection. Looking abroad in the world we find that the very diversified and most serviceable energies of modern medicine are largely bought by cities, States, and nations. "Straptitude" we know, but it affects only those long since shoaled out of the current and the innocents whom Alma Mater thrusts unfit into swift water.

By the set of the tide in this vicinity we estimate that aeons will pass before the progress of hygiene will confront the efficient medical man with the grim phiz of straptitude.

AWAKE, BOSTON!

A VERY appreciative editorial notice of the recent report of the Maryland Tuberculosis Commission appears in the *Boston Medical and Surgical Journal* for October 13, 1904.

The assurance that the distinguished editor has "seen no better presentation of the subject as addressed to the lay mind" is peculiarly gratifying to us in Maryland. Yet more agreeable to us is the comment that the Commission's estimate of a potential annual loss of $7,500,000, though very impressive, is quite conservative, if not indeed well within the truth concerning the cost of tuberculosis. Our excellent critic in Boston thinks that the untimely death of the head of a family often entails upon children the sacrifice of training, and that a very large amount should be added on this account to the estimated potential loss. We wish that such enlightened ideas had their just weight in Maryland. The estimate of the Commission includes, however, only such items as Maryland statesmen will admit.

Those who have kept in touch with the American crusade against tuberculosis will, perhaps, be surprised by the announcement in the *Boston Medical and Surgical Journal* that the Maryland Commission, in conjunction with the State Board of Health of Maryland, proposes to hold a tuberculosis exposition in Baltimore next January. A tuberculosis exposition was held in Baltimore last January under just such auspices, and the details described by our editorial friend, including the generosity of the Johns Hopkins University, the able auxiliary leadership of Dr. Henry Barton Jacobs, the lectures of Drs. Flick, Ravenel, Salmon, Adami, Knopf, and others, the daily demonstrations, were presented in full to the Maryland public and to interested visitors from all parts of America in a January now gone by. We thought that the event was rather important, and are somewhat disappointed that in Boston its history has been mistaken for prophecy.

Reference is made to the Boston Tuberculosis Exposition, now in progress. Our own interest in the Boston exposition began long in advance of its opening, and our acquaintance with its contents leads us to doubt whether our esteemed contemporary has correctly reported the presence in Boston of an exhibit from the Health Department of Baltimore.

SAFEGUARDING CRIME.

In the editorial pages of the Maryland Medical Journal a few months ago attention was called to a very dangerous law, enacted by the general assembly of 1904, providing that the resident or attending physician of any institution might, on application to the county commissioners, be appointed a subregister of vital statistics, with the authority to grant permits for the burial of persons dying in such institutions. Several dangers were pointed out as inseparable from this investiture of one man with the right to attend the sick, to make death certificates, and to authorize the final disposition of the dead. It was pointed out that such an arrangement would probably be regarded by the thoughtful and honest physician as too compromising, and by the dishonest or criminal as a convenient aid in the concealment of crime. Only two institutional physicians have accepted such appointments, and so far nothing has happened to make them regret the exercise of such dangerous authority.

We called especial attention in the former editorial to the protection which this law would afford to criminal practice in the vicinity of Baltimore and Washington. An instance has recently come to light of a crime which, if the provisions of this new law had been available, would never have been unearthed.

A young woman of Washington, being pregnant, entered a small sanitarium situated in a Maryland village near the District line for the purpose of procuring an abortion. She died a few days later as a result of the criminal operation. The cause assigned by the physician in his certificate of death was endocarditis. His certificate was presented to the local subregistrar, and the case came to the attention of the State's attorney. No evidence against the physician was discovered, however, and the body was released for removal to Washington and from thence to Ohio for burial. Later investigation appeared to warrant the arrest of the physician, and he is now on trial in the Circuit Court of Prince George county.

At the present time a physician running such a "sanitarium" in the Maryland suburbs of Washington may ask the county commissioners to appoint him a subregistrar of vital statistics. Receiving such an appointment, he may use the authority of the State of Maryland to hide any homicide committed upon his premises.

The chances of punishment for criminal abortion are absolutely limited to the cases resulting fatally. Give the abortionist the right to dispose of dead bodies in the name and authority of the State and practically every adverse chance is eliminated from the practice of criminal abortion.

In many years past Maryland justice has overtaken but one of the many men who ply this hideous trade. And that one, after a long career, the most notorious and dangerous of them all, has succeeded in bringing respectable influence to bear upon His Excellency the Governor, so that we may lose through executive clemency the small weight of criminal liability which is supposed to make foeticide more hazardous than the legitimate practice of medicine.

Medical Items.

The Fourth Pan-American Medical Congress, which will convene in Panama the first week in January next, bids fair to be a most delightful midwinter trip. The delegates will leave this country by the Atlantic, Pacific and Gulf coasts the last week in December. The Public Health Association meeting will take place on the following week in Havana, and those desirous of attending both meetings can arrange to do so. There are two routes for the physicians to take from Panama to Havana. The first is by way of Jamaica to Santiago de Cuba by boat, and overland by rail to Havana. The second is by water from Panama to Vera Cruz, and from there to Havana. The former will probably be the most pleasant trip. From Havana the return trip can be made directly north to New York by water or via Miami or Tampa, Fla., or New Orleans. The connections and dates of sailing are now being arranged. The Panamanian government has appropriated $25,000 for the scientific session and the entertainment. The congress will be held from the 2d to the 6th of January. The afternoons will be devoted to the scientific sessions, and the mornings and evenings to trips and social functions. So far as can be learned, the program in Panama will be a reception on the first day by President Amador of the Panama republic, and the formal opening session of the congress the same evening; on the second day, an excursion to the canal in the morning, meeting of the various sections in the afternoon, and a banquet in the evening; on the third day, an excursion down the bay to Taboga island, where a Panama breakfast will be served, scientific sessions in the afternoon, and a ball in the evening; on the fourth day, an excursion to the United States army barracks in the morning, section meetings in the afternoon, and the formal closing session in the evening.

Major Louis L. Seaman, U. S. A., who has recently returned from the Orient after a study of the medical organization of the Japanese army, read a very forcible paper before the Association of Military and Naval Surgeons at St. Louis on October 11. Dr. Seaman scored the existing medical organization of the United States army very heavily. If his description of the wonderful activity and efficiency of the Japanese medical officer is not overdrawn, it affords a contrast such as critics of American methods in military medicine have not been able heretofore to imagine. Dr. Seaman's notes on the Japanese medical service have been reprinted widely. Dr. Seaman says:

"If wars are inevitable and the slaughter of men must go on, then, for the love of God, let our men die on the field, fighting for the stake at issue, not by the wayside from preventable diseases, as in the Spanish-American War, 1400 for every 100 that died in action. It is for the 1400 poor devils who are sacrified that I offer my prayer.

"Should occasion arise for the gathering of another army of 250,000 next summer, what evidence is submitted to prove that the lamentable scenes of 1898, with all their nauseating details, would not be repeated? I ask what tangible evidence is submitted to show that history would not repeat itself, and that such an army, gathered hastily, would not again be brought almost to its knees, through the same ignorance and incompetency?

"But what can be expected of a government that, after its terrible lessons of 1898-1899, still insists, especially in the tropics, of subsisting its army on a ration so rich and elastic (lovely term, that elastic), so elastic that when, in the emergency of war, its elasticity is tested, it bursts its bands, and is found to consist of pork and beans and fermenting canned rubbish that in six weeks prostrates 50 per cent. of its 250,000 units with intestinal diseases, and sends 3000 to their last homes, to say nothing of the enormous number invalided and the 75,000 pension claims? What can be expected from a Congress so devoid of business principles that it prefers pensions to prevention? Like the rest of the world, we go blundering on, spending millions annually for the maintenance of great military schools, and arsenals, and war colleges, educating men in the art of human destruction, while the more formidable adversary in the ranks, the grim specter that kills 80 per cent., is left comparatively unheeded!

"Perhaps the day is not distant when another summons will come to join the Army of the Republic, when the first call may be, not as in the great rebellion, for 60,000 men, nor, as in the Spanish-American War, for 250,000, but when more likely it will be for a round half million, to be followed possibly by another of equal number. And a question will be asked by the young patriot of that day, not who the enemy is he is to meet—no, the American boy is not built that way; but he will demand to know what measures have been taken to insure him against the silent enemy who kills the 80 per cent."

Summary of Results of Examinations Held by the Board of Medical Examiners of Maryland, June 15, 16, 17 and 18, 1904.

No.	College of Graduation.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
1	University of Maryland	82	75	60	90	83	60	76	80	90	696	77
2	University of Maryland	..	50	25	..	65	..	..	..	..	..	..
3	University of Maryland	90	85	75	90	87	75	76	78	92	748	83
4	Maryland Medical College	88	95	65	90	90	55	85	84	95	747	83
5	College of Physicians and Surgeons	..	..	..	..	..	..	..	..	84	..	..
6	Johns Hopkins Medical Department	96	95	90	100	87	80	88	90	95	821	91
7	College of Physicians and Surgeons	83	90	80	100	78	65	..	..	90	586	..
8	Maryland Medical College	87	90	80	90	92	80	84	84	85	772	85
9	Baltimore Medical College	89	..	..	..	..	60	81	..	100	..	..
10	Baltimore Medical College	96	..	..	..	..	85	81	..	100	..	..
11	College of Physicians and Surgeons	82	75	40	95	68	..	78	75	90	603	..
12	Johns Hopkins Medical Department	92	100	80	95	68	55	90	87	88	755	83
13	Maryland University	74	85	75	85	84	55	80	..	86	624	..
14	Baltimore University of Medicine	..	..	..	..	..	..	..	..	..	..	..
15	University of Maryland	85	85	75	90	89	75	83	76	84	742	82
16	College of Physicians and Surgeons	81	95	70	100	86	60	87	97	95	771	85
17	University of Maryland	89	..	..	..	..	75	85	..	80	..	..
18	University of Maryland	75	..	..	..	..	75	..	..	..	..	..
19	Baltimore University	38	..	15	..	59	40	..	..	75	..	..
20	Baltimore Medical College	76	85	75	90	76	60	81	79	90	712	79
21	University of Maryland	91	90	75	85	87	75	80	89	84	756	84
22	University of Maryland	90	..	..	..	..	85	83	..	95	..	..
23	Baltimore Medical College	43	60	40	85	84	30	76	75	80	573	63
24	University of Maryland	80	..	..	..	..	30	79	..	75	..	..
25	Baltimore Medical College	69	90	50	84	94	75	75	81	75	693	77
26	University of Maryland	87	90	75	100	80	70	87	85	76	750	83
27	University of Maryland	81	..	..	..	..	20	83	..	87	..	..
28	Woman's Medical College, Pennsylvania	86	..	..	..	..	75	87	84	96	..	..
29	University of the South, Tennessee	..	..	..	..	..	..	..	..	..	..	..
30	Columbian University	83	95	75	100	94	75	97	94	85	798	88
31	College of Physicians and Surgeons	85	90	80	90	96	80	89	82	100	792	88
32	University of Maryland	..	..	..	..	..	..	76	..	..	..	..
33	Baltimore Medical College	90	..	..	..	..	60	76	..	85	..	..
34	Maryland Medical College	70	75	..	85	..	25	..	..	60	..	..
35	Baltimore Medical College	79	85	75	95	89	75	88	75	86	747	83
36	University of Maryland	89	100	80	..	86	85	87	86	92	705	78
37	Maryland Medical College	69	80	25	90	67	40	81	78	84	614	68
38	Maryland Medical College	87	85	75	90	84	75	83	83	75	737	81
39	Columbian University	66	100	45	90	87	45	83	90	85	691	76
40	University of Maryland	66	80	40	95	78	45	82	83	76	645	71
41	University of Maryland	82	90	80	100	89	85	91	90	93	800	88
42	College of Physicians and Surgeons	87	80	60	80	79	45	84	84	77	676	75
43	University of Maryland	87	95	75	90	89	75	88	73	83	765	85
44	University of Maryland	72	75	35	75	78	55	83	84	82	639	71
45	College of Physicians and Surgeons	88	90	65	85	89	60	79	78	90	724	80
46	University of Maryland	70	75	60	95	80	75	88	92	83	718	79
47	University of Maryland	82	90	75	100	76	75	85	89	95	767	85
48	Maryland Medical College	75	..	..	..	..	75	..	..	..	..	..
49	University of Maryland	82	90	75	95	81	85	83	89	80	760	84
50	College of Physicians and Surgeons	80	90	65	95	89	50	86	77	81	713	79
51	University of Maryland	100	98	75	90	80	93	84	..	92	712	79
52	University of Maryland	86	90	75	90	84	65	93	88	92	763	84
53	College of Physicians and Surgeons	85	95	80	100	87	40	86	79	91	743	82
54	University of Maryland	..	..	..	..	..	50	..	..	..	..	..
55	Baltimore Medical College	75	..	75	..	..	75	..	..	..	..	..
56	University of Maryland	88	..	..	..	..	40	68	..	92	..	..
57	University of Maryland	93	90	90	90	86	90	90	94	86	809	89
58	Maryland Medical College	87	85	65	90	81	55	80	82	85	710	78

Summary of Results of Examination Held by the Board of Medical Examiners of Maryland, June 14, 15, 16 and 17, 1904—*(Continued.)*

No.	COLLEGE OF GRADUATION.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
59	Columbian University	68	90	40	90	77	30	82	90	84	651	72
60	Johns Hopkins Medical Department	88	..	..	..	..	80	90	..	100	..	..
61	College of Physicians and Surgeons	89	90	75	90	75	55	86	87	94	741	82
62	University of Maryland	89	..	..	..	..	80	88	..	85	..	..
63	Maryland Medical College	90	..	..	..	..	75	80	..	75	..	..
64	Baltimore Medical College	77	80	60	90	85	50	88	82	88	700	77
65	University of Maryland	..	80	75	..	..	75	..	..	75	..	..
66	Baltimore Medical College	76	..	..	..	..	25	52	..	93	..	..
67	College of Physicians and Surgeons	80	75	35	75	69	30	83	82	75	604	67
68	Baltimore University	..	..	35	..	82	60	88	83	71	..	..
69	College of Physicians and Surgeons	83	75	35	80	72	25	83	87	75	615	68
70	University of Maryland	87	95	80	100	92	85	92	89	94	814	90
71	Johns Hopkins Medical Department	91	..	..	..	..	65	68	..	96	..	..
72	Baltimore Medical College	84	..	..	..	..	60	70	..	85	..	..
73	University of Maryland	92	..	..	..	..	75	91	..	95	..	..
74	University of Maryland	39	80	50	75	79	60	85	84	78	630	70
75	Georgetown University	78	90	75	90	92	75	76	84	94	754	83
76	Maryland Medical College	81	..	..	..	..	55	86	..	94	..	..
77	University of Maryland	..	..	..	..	..	..	..	..	..	..	..
78	University of Maryland	93	..	..	..	..	80	86	..	98	..	..
79	University of Maryland	79	80	50	75	80	65	80	81	75	675	75
80	University of Maryland	52	75	62	100	75	60	87	87	77	675	75
81	Baltimore Medical College	87	75	75	90	82	75	81	75	70	700	77
82	Baltimore University	27	30	10	75	57	15	70	67	64	415	46
83	University of Maryland	57	75	55	90	68	35	79	90	90	639	71
84	Illinois Medical College	62	85	40	85	72	25	77	56	87	589	65
85	University of Maryland	..	50	45	..	68	20	85	..	78	..	..
86	Baltimore University	53	60	40	75	73	40	72	76	75	564	62
87	Baltimore Medical College	77	90	75	100	90	75	96	90	90	783	87
88	University of Maryland	80	90	75	85	82	60	81	87	81	726	80
89	Columbian University	87	..	..	..	..	75	75	..	82	..	..
90	Baltimore University	63	..	25	..	61	10	..	..	65	..	..
91	University of Maryland	73	90	75	90	82	75	83	85	78	731	81
92	University of Maryland	72	75	75	80	74	45	83	84	87	675	75
93	University of Maryland	75	75	80	85	79	78	90	87	85	734	81
94	University of Maryland	..	80	55	90	71	20	66	67	70	519	57
95	Baltimore Medical College	71	40	75	90	73	35	78	..	80	512	56
96	Baltimore Medical College	67	75	80	85	86	80	86	80	96	735	81
97	University of Maryland	84	95	80	90	87	50	86	77	92	741	82
98	Bellevue	77	85	75	95	75	65	75	60	90	697	77
99	Baltimore Medical College	79	75	75	95	80	55	88	83	90	720	80
100	Columbian University	89	100	75	100	92	75	92	90	90	803	89
101	Maryland Medical College	81	..	75	..	..	75	..	..	..	..	..
102	University of Pennsylvania	89	95	75	75	85	75	86	88	94	762	84
103	College of Physicians and Surgeons	66	80	60	90	78	60	84	77	80	675	75
104	College of Physicians and Surgeons	78	85	35	75	83	25	77	75	78	611	67
105	Maryland Medical College	50	..	30	..	..	55	..	..	..	..	..
106	Baltimore Medical College	..	..	..	..	..	50	73.	..	95	..	..
107	Maryland Medical College	61	80	50	75	78	60	84	75	83	646	71
108	College of Physicians and Surgeons	87	..	..	..	..	60	75	..	90	..	..
109	Baltimore Medical College	94	95	95	90	92	90	96	88	91	831	92
110	University of Maryland	..	80	75	..	..	75	..	..	..	..	..
111	College of Physicians and Surgeons	91	95	85	100	90	100	87	92	92	832	92
112	University of Maryland	..	..	..	..	..	..	..	..	..	..	..
113	University of Maryland	78	95	65	100	76	65	85	90	83	737	81
114	University of Maryland	62	75	65	86	80	55	79	83	90	675	75
115	University of Maryland	..	..	..	..	..	..	..	..	..	..	..
116	College of Physicians and Surgeons	88	90	65	80	77	35	78	83	90	686	76
117	Johns Hopkins Medical Department	..	..	..	..	..	..	..	..	..	..	..
118	Baltimore Medical College	93	80	65	90	81	60	81	90	88	728	80
119	University of Maryland	77	85	65	75	72	75	77	80	80	686	76
120	Baltimore Medical College	89	..	..	..	..	45	77	..	97	..	..

Summary of Results of Examination Held by the Board of Medical Examiners of Maryland, June 14, 15, 16 and 17, 1904—(*Continued.*)

No.	College of Graduation.	Anatomy	Surgery	Pathology	Obstetrics	Practice	Chemistry	Materia Medica	Therapeutics	Physiology	Total	Average
121	University of Maryland	100	90	90	100	88	89	85	96	89	827	91
122	Columbian University	90	90	75	75	86	75	84	81	92	748	83
123	College of Physicians and Surgeons	86	90	85	100	91	55	83	77	86	753	83
124	Baltimore Medical College	45	65	25	75	69	40	75	73	70	537	59
125	College of Physicians and Surgeons	78	80	45	75	64	20	51	54	73	540	60
126	Maryland Medical College	51	..	30	..	..	75	..	..	..	..	..
127	Baltimore Medical College	98	90	80	100	89	85	86	95	100	723	80
128	University of Maryland	83	60	50	90	72	..	..	..	88	..	..
129	Baltimore Medical College	75	50	35	85	69	40	83	83	83	603	67
130	University of Maryland	76	80	65	100	78	60	90	88	92	729	81
131	Maryland Medical College	85	90	75	90	84	50	82	86	93	735	81
132	Maryland Medical College	80	85	60	85	77	65	75	90	94	711	79
133	Baltimore Medical College	81	..	..	..	..	..	71	..	98	..	..
134	University of Maryland	..	..	..	..	..	..	..	..	..	..	..
135	University of Maryland	85	80	80	90	80	80	88	93	96	772	85
136	College of Physicians and Surgeons	75	95	75	100	81	50	90	90	80	736	81
137	Johns Hopkins Medical Department	77	90	95	100	96	95	93	94	100	840	93
138	Maryland Medical College	..	..	..	..	..	20	..	..	..	..	..
139	Georgetown Medical College	83	90	75	95	90	75	82	80	87	757	84
140	Baltimore Medical College	63	75	50	80	72	35	88	81	81	625	69
141	Maryland Medical College	73	80	40	70	75	45	81	77	93	634	70
142	Baltimore Medical College	97	..	..	..	..	75	73	..	100	..	..
143	College of Physicians and Surgeons	91	..	..	..	..	75	57	..	89	..	..
144	Baltimore Medical College	72	85	75	90	81	65	88	81	83	720	80
145	Johns Hopkins Medical Department	96	..	..	..	..	50	85	..	95	..	..
146	Baltimore Medical College	75	85	40	90	87	75	93	98	85	728	80
147	Maryland Medical College	81	95	60	75	84	39	78	80	83	675	75
148	University of Maryland	81	90	75	100	78	75	90	93	93	775	86
149	Johns Hopkins Medical Department	86	95	95	100	77	50	81	92	90	766	85
150	University of Maryland	86	90	60	90	79	60	93	87	83	728	80
151	Woman's Medical College, Baltimore	84	85	80	92	88	75	85	87	87	763	84
152	Ohio Medical University	46	..	30	..	..	55	..	..	77	..	..
153	College of Physicians and Surgeons	94	85	80	100	83	75	87	85	92	781	86
154	University of Maryland	75	85	60	85	83	60	76	97	92	713	79
155	College of Physicians and Surgeons	78	85	45	75	88	60	76	80	88	675	75
156	Johns Hopkins Medical Department	80	90	75	90	90	30	90	88	97	730	81
157	Maryland Medical College	77	95	60	100	80	55	80	90	84	721	80
158	University of Maryland	73	85	50	85	75	40	92	90	86	676	75
159	Baltimore Medical College	81	..	..	..	..	30	68	90	..	..	..
160	University of Maryland	77	85	75	90	87	80	93	95	91	773	85
161	College of Physicians and Surgeons	91	..	..	..	..	50	68	..	83	..	..
162	College of Physicians and Surgeons	87	85	55	100	77	50	94	89	93	730	81
163	Maryland Medical College	70	85	35	70	76	20	75	74	75	580	64
164	Baltimore Medical College	77	90	30	85	78	60	86	95	74	675	75
165	Jefferson Medical College	91	95	80	100	88	75	96	83	100	808	89
166	College of Physicians and Surgeons	44	85	35	90	69	20	60	45	78	526	58
167	University of Maryland	88	..	..	..	..	45	72	..	81	..	..
168	University of Maryland	98	85	95	90	91	100	87	93	94	833	92
169	University of Maryland	77	75	75	100	85	75	79	91	81	738	82
170	Maryland Medical College	75	..	..	..	..	60	63	..	90	..	..
171	College of Physicians and Surgeons	90	..	..	..	..	30	76	..	90	..	..
172	Baltimore University	77	..	20	..	..	5	87	..	55	..	..
173	Baltimore University	81	80	65	65	77	50	75	60	75	618	68
174	Johns Hopkins Medical Department	94	80	86	85	84	82	82	82	94	769	85

Of the 174 applicants in the above list, there are 122 who participated in the examination for the first time, of whom 88 were successful. Thirty-four of this number failed. There were 18 applying for re-examination, five of whom secured a license. Thirteen were re-examined and failed to work off branches in which they had previously failed, so that they were not able to secure license. There were 30 taking the examination at the conclusion of their second year of study in anatomy, chemistry, materia medica and physiology. Four applicants failed to appear.

Report of Board of Medical Examiners of Maryland.

QUESTIONS AT THE JUNE (1904) EXAMINATIONS.

ANATOMY.

1. What are the characteristics of the cervical vertebrae?

2. Name the openings into the pharynx.

3. Name the subdivisions of the alimentary canal.

4. Bound the axilla, and name the contents of the axillary space.

5. Name muscles having an attachment to the scapula.

6. What is the size of Peyer's glands, and where are they found?

SURGERY.

1. Give diagnosis and treatment of femoral hernia.

2. Give medical and surgical treatment of epistaxis.

3. Describe the Trendelenberg position and its uses.

4. Ischio-rectal abscess—(a) causes, (b) diagnosis, (c) treatment.

5. What is talipes, and name its varieties. Give your treatment of the first variety you name.

6. Describe the operation of ligation of the lingual artery.

PATHOLOGY.

Question No. 1.

(Applicant is required to answer but one of the two questions included under this number. and must not answer both.)

Explain the significance of the laboratory terms fixing, hardening, staining, and mounting as applied to tissues.

Or,

Name and describe three varieties of artificial culture media.

Question No. 2.

(Applicant is required to answer but one of the two questions included under this number, and must not answer both.)

You are given a specimen of pus in a sterile vessel and instructed to determine the identity of the organisms concerned in its production. Tell in some detail how you would proceed.

Or,

A voluntary muscle is pierced by a thread infected with pyogenic micro-organisms. Twenty-four hours later a portion of the muscle containing the thread is removed and prepared for microscopic examination. Describe in detail the picture you would expect to find.

Question No. 3.

Mention the specific cause, its probable method of conveyance, and portal of entry in each of the following affections: (1) Erysipelas. (2) tertian ague, (3) hip-joint disease, (4) croupous pneumonia, (5) ophthalmia neonatorum, (6) trichiniasis, (7) malignant pustule, (8) Asiatic cholera, (9) bubonic plague, (10) typhoid fever.

Question No. 4.

Lipomata—definition, histological structure, varieties.

Question No. 5.

Mention the organs usually affected in typhoid fever and the lesions which occur in each. Describe the lesion you consider most characteristic of this disease.

Question No. 6.

Give a gross and histological description of a tubercular cavity in a lung.

OBSTETRICS.

1. Describe the application and use of the obstetrical forceps.

2. Describe the care of and the methods of using the vaginal speculum.

3. Name some of the necessities for catheterization and its possible abuse during pregnancy and after confinement.

4. Name some of the uses and abuses of irrigation during pregnancy and after labor.

5. Describe a normal case of labor, selecting any presentation you may prefer.

6. Describe causes and treatment of antepartum hemorrhage.

PRACTICE.

1. Define hepatitis, colitis, Hodgkin's disease, herpes zoster, epilepsy.

2. What is a zymotic disease? Give three examples and diagnosis of each example as named.

3. Etiology, clinical history, and treatment of acute gastrointestinal catarrh in a child under two years of age.

4. Give diagnosis and treatment of an acute attack of nephritis.

5. Give symptoms and treatment of chorea minor.

6. Give symptoms and treatment of an acute attack of pleurisy and sequelae.

CHEMISTRY.

Question No. 1.

(Applicant is required to answer but one of the two questions included under this number, and must not answer both.)

Explain the law of combination in multiple proportions. Give an illustration.

Or,

Give Avogadro's hypothesis regarding the combining volume of gases.

Question No. 2.

(Applicant is required to answer but one of the two questions included under this number, and must not answer both.)

What is the reaction of normal 24-hour urine? Usual method of determination? How physiologically influenced?

Or,

What is meant by amphoteric reaction of urine? To what is this reaction due?

Question No. 3.

Describe in detail a clinical method for the quantitative determination of urea. What proportion should its daily excretion bear to the body weight of the normal adult?

Question No. 4.

Write formula for a mother to use in home modification of cow's milk to yield the following proportions: Total quantity, 40 ounces; fats, 3 per cent.; proteids, 2 per cent.; sugar, 6 per cent.; alkalinity (expressed in lime water), 10 per cent.

Question No. 5.

Criticise the following mixtures intended for internal administration: (a) containing calomel, subnitrate of bismuth, and lime water; (b) containing salicylic acid, tincture of the chloride of iron, and simple syrup, and (c) containing tincture of kino, solution of the subsulphate of iron, and water.

Question No. 6.

What chemical antidotes would you administer in a case of acute arsenical poisoning, and why?

MATERIA MEDICA.

1. Argentum—officinal preparations and incompatibles.

2. Lithium — officinal preparations, their doses, and physiological action.

3. Acidum salicylicum—its dose and physiological action.

4. Aconite—(a) its source, (b) its physiological action, (c) toxicology, (d) officinal preparations, and dose of each.

5. Strophanthus—its physiological action.

6. Strychnine — give chemical test for its presence. What are its physiological effects? Give symptoms and treatment of strychnine poisoning.

THERAPEUTICS.

1. What is therapeutics?

2. How does empirical differ from rational therapeutics?

3. Write a prescription for acute bronchitis.

4. Ergot—its therapeutic uses.

5. Therapeutic uses of the mineral acids.

6. Therapeutic uses of the preparations of iron.

PHYSIOLOGY.

1. What nerves control the action of the heart?

2. (a) State the average specific gravity of the blood; (b) state some causes of variation in specific gravity; (c) its reaction, and (d) the proportion its total amount bears to the weight of the adult human male.

3. (a) What secretion of the body contains a free acid? (b) name the acid, and (c) give theory as to its source.

4. Give the physiological functions of the liver.

5. (a) What is the difference between medullated and non-medullated nerve fibers? (b) Define afferent, efferent, trophic, inhibitory, motor, and vasomotor nerve fiber.

6. (a) What do you mean by the temperature of the body? (b) What are some of the causes of variations in body temperature?

MARYLAND

MEDICAL JOURNAL

A Journal of Medicine and Surgery

Vol. XLVII No. 12 BALTIMORE, DECEMBER, 1904 Whole No. 1039

THE ROLE PLAYED BY NEPHRITIS IN OBSTETRICS.

By Geo. W. Dobbin, M.D.,

Professor of Obstetrics in the College of Physicians and Surgeons, Baltimore.

READ AT THE SYMPOSIUM ON NEPHRITIS BEFORE THE MEDICAL AND CHIRURGICAL FACULTY AT OCEAN CITY, SEPT. 12, 1904.

If one is restricted to the field indicated by the title of this paper, namely, "The Rôle Played by Nephritis in Obstetrics," the class of cases considered will be a comparatively small one. I take it, however, that it is intended that I should consider not only the cases of pregnancy that are complicated by nephritis, but also the allied conditions, namely, those of toxemia, in which the nephritis which is usually present, is the result rather than the cause of the condition.

We can thus consider our subject under two headings—firstly, those cases of chronic nephritis which become pregnant, and secondly, cases of toxemia which are peculiar to pregnancy itself. In this last class we can differentiate between typical eclampsia and that perplexing condition which, for want of a better name, we speak of as toxemia of pregnancy.

Let us consider first some of the effects of chronic interstitial nephritis upon a pregnant woman.

Pregnancy occurring in a subject with chronic interstitial nephritis must always be considered as a serious complication. It is well known that the increased metabolism during pregnancy throws extra work upon the kidneys, and a kidney crippled by long-standing disease will not rise to this extra work during pregnancy. These cases rarely terminate in eclampsia, but the renal lesions occasionally become so aggravated that uremic poisoning results. The commonest result of nephritis is observed in the placenta, in the so-called red infarcts. These lesions have a decided clinical significance, as they may involve the placenta to such a great extent as to interfere with the nutrition of the fetus, and it is probable that these infarcts are the cause of the high fetal mortality in nephritis second only to that caused by syphilis.

Williams, in an extensive article on infarcts of the placenta, says that we are not yet in a position to explain the mode of the production of the hemorrhagic ones. He quotes statistics showing that they are present in from 30 to 67 per cent. of cases. Even if these changes are not sufficiently marked to cause the death of the child and premature delivery, the fetus is often so poorly developed that it dies shortly after birth. If the case goes on, in the later months secondary cardiac involvement is by no means uncommon. I recall a case of this kind seen recently in which the pregnancy was within two weeks of term. This patient when I first saw her was suffering greatly with dyspnea, rapid weak pulse, urine containing albumen, so that at first I thought the cardiac lesion was predominant. Immediately after delivery she became comatose and died.

It is said that pregnancy has a bad influence upon nephritis, and that not infrequently after the birth of the child the patient will get worse. Personally I have not observed this, as several cases that I have had under observation have improved after the uterus was emptied. I will consider the treatment of these cases later.

CASES OF TOXEMIA PECULIAR TO PREGNANCY.

That the pregnant woman is liable to a peculiar form of toxemia has long been recognized, and when Rayer and Lever, 50 years ago, demonstrated the presence of albumen in the urine of these cases it was thought that the essential pathological lesion was a nephritis and the condition identical with uremia. This view has long since been abandoned for the reason that patients with nephritis becoming pregnant rarely have eclampsia, and in eclampsia the urine at the time of the convulsion does not necessarily contain albumen. Schroeder, Ingerslev, and Charpenter have collected 143 such cases from the literature.

As a rule, lesions of the kidney will be found at the autopsy, and they were demonstrated by Prutz in all but seven of 368 cases. Frequently, however, they are so insignificant as to preclude the justifiability of calling the nephritis the essential lesion, and Prutz considers it secondary in the majority of cases. Jurgens and Krebs in 1886 pointed out the existence of a hemorrhagic hepatitis, and Schmorl in 1893 demonstrated this lesion as a constant occurrence in eclampsia. He describes the liver lesion as anemic and hemorrhagic areas as necrosis, and was able to demonstrate them in 71 out of 73 autopsies. This lesion has been found so constant that certain French observers, namely, Tanier and Bouffe de Saint Blaise, consider it the primary lesion of the disease, and speak of the condition as a hepato-toxemia.

Innumerable theories have been advanced as to the essential nature of this poison, and it is out of place to consider that at this time. Zweifel has aptly termed eclampsia the disease of theories, and I will consider only those which have come into prominence within the last few years.

Fehling and Deinst have advanced the theory that the intoxication may be due to the products of fetal metabolism, which products, in addition to her own waste, the maternal organism for some unaccountable reason is unable to eliminate. Thus an accumulation of toxic material occurs within her system, which eventually gives rise to grave symptoms. This theory receives abundant support from the clinical side of the subject, for it is a well-known fact that grave symptoms markedly improve with the intrauterine death of the child. A most marked example of this occurrence has come to my notice within the last few days. Again, certain observers, among whom may be mentioned Wilke, Woyer, and Schmid, have noted convulsions of the child shortly after its birth, and others have found lesions in the liver and kidneys of the child similar to those noted in the eclamptic mother.

About 18 months ago Nicholson put forth an interesting theory as to the cause of eclampsia in the inadequacy of the maternal thyroid system. He says that the kidneys and liver suffer no permanent change, and that all recent observations point to the convulsions being due to some toxic substance in the maternal blood. He considers that the following factors: changes in the character of the pulse, marked diminution in the quantity of urine in 24 hours, the diminished amount of urea in the urine, all point to the fact that the nitrogenous metabolism is not being carried out. The normal hypertrophy of the thyroid gland which takes place in pregnancy indicates that greater metabolic powers are necessary at this time. For these reasons he compares the eclamptic condition to advanced myxedema. Norris says that for reasons yet obscure Nicholson is of the opinion that the supply of iodothyrin becomes deficient for the needs of normal metabolism, and toxic substances develop which, by their property of contracting blood-vessels, eventually lead to suppression of the renal secretion. He therefore advises the administration of thyroid extract with a view to aiding the injured metabolic powers. The action of the extract he claims to be in its vasodilator effect, stimulating excretion.

An interesting article by Zweifel based upon a study of the cases of eclampsia in the Leipzig clinic has just been published. After a review of the literature, he concludes that the cause of eclampsia is a poison circulating in the blood, which attacks the epithelium of the parenchymatous organs, extensively damages the heart muscles, and disorganizes the blood. He tries to ascertain the nature of this poison. In man urea represents 83 per cent. of the nitrogenous waste. After an examination of the urine in eclampsia he observed that the quantity of urea in proportion to the entire nitrogenous waste is greatly lessened, and the quantity of albumen present varies indirectly with the quantity of urea. He thus believes that the quantity of albumen can be used as an estimate of the patient's eliminative powers. He also investigated the urea in *the blood*, and found it impossible to use this as a means of prognosis. He estimated the salts of ammonium in the urine, and found, as had Zangemeister, that these compounds are increased in eclampsia. He concludes that the poison of eclampsia is an organic acid capable of oxygenation and readily changeable into various compounds. He draws attention to leucomaines and ptomaines, and also sulphates in the urine, as indicating the degree in which the unknown acid remains free or undergoes combination, and finds that the severer the case of eclampsia the smaller the quantity of sulphates in the urine, and so the greater the quantity of neutral sulphur. This account points to the lack of oxidation of albuminoid material as the primary cause of eclampsia.

In searching further to determine this acid he finds that lactic acid is the only one which is poisonous, and not found in the metabolism of healthy human beings. He considers it significant that cases of nephritis without eclampsia do not give the same results when the metabolism is studied.

Clinically under this heading—toxemic conditions peculiar to pregnancy—we can differentiate another class of cases which, although closely allied to eclampsia and occasionally terminating in a convulsive attack, nevertheless show certain differences which give rise to the non-committal title of toxemia of pregnancy. To Davis of Philadelphia belongs the credit of calling our attention to the fact that many cases of excessive vomiting, headache, pains of various kinds, mental disturbances, etc., can be entirely relieved if eliminative treatment be instituted. Such conditions may be extremely grave; in fact, I have seen two women die in coma—one before and one after delivery. The etiological factors here are probably analogous to those in typical eclampsia, but my opinion is that there is a distinct clinical difference, in that such cases do not as frequently terminate in convulsions, and we find albumen either entirely absent or in insignificant amount oftener than in typical eclampsia.

To descend from the theoretical maze into the practical walks of medicine, we can see that this toxemia, whatever its cause, is indicated by urinary changes that can always be recognized. These changes consist of the presence of albumen in the urine and the diminution in the amount of urea excreted daily, and although they are of great prognostic value, must be considered only as adjuncts to the clinical manifestations of the case.

In considering the treatment of the kidney complications in obstetrics I will refer only to a few of the salient points and make absolutely no attempt to go into the details. I desire to emphasize the importance of the closest observation of the elimination in a patient in whom the conditions just considered are suspected. This can only be done by a daily examination of the urine and an estimation of the amount of urea eliminated in 24 hours. In order to do this the patient or nurse must be instructed to collect and save every drop of urine that is passed in the day, and must send a mixed specimen to the physician in the morning. The most practical method of urea estimation is that of Doremus, in which a freshly-prepared solution of sodium hypobromite is used to decompose the urine, and the quantity of free nitrogen resulting is read by means of a graduated tube. I have had no practical experience with the estimation of the salts of ammonium or sulphate as described by Zweifel, and cannot speak of their value. A method of tabulating the results of the daily examination can be made use of in the so-called eclampsia chart. In this chart the daily amounts of albumen and urea are tabulated, and any depression from the normal line is of grave prognostic import, while an ascent to the line is of favorable significance. If such a chart be kept in cases of nephritis, eclampsia, or toxemia of pregnancy, we will have a valuable indication of the patient's elimination.

When patients with chronic interstitial nephritis become pregnant their condition should always be considered serious. Fetal death in such cases is exceedingly common at about the seventh month; hence from the fifth month on their eliminating powers should be most carefully observed and stimulated by proper diet and medication. It should be remembered that cases of chronic nephritis do not usually terminate in eclampsia, but if the condition of the patient's kidneys be not known before pregnancy, I consider it a difficult point to differentiate between pregnancy with nephritis and a threatened eclampsia.

Much can be done in the way of eliminative treatment in the cases of toxemia which are peculiar to pregnancy. Repeated examinations of the urine should be insisted upon, and in the latter three months unusual symptoms of any kind should always suggest examination of the patient's elimination, and if this be found deficient, treatment by sweats, catharsis, diet, etc., should be immediately instituted. I have had no practical experience with the treatment by means of thyroid extract advised by Nicholson save that I recall the case of a physician's wife whose nitrogenous elimination was markedly increased by its use. Strumer describes 41 cases of eclampsia treated by thyroid extract. They were given 10 grs. of the extract as soon as admitted and 5 grs. every four hours afterwards. In addition to the extract, saline infusion, morphia, and the other usual remedies were used. The report in these 41 cases was a mortality of 12.2 per cent., against a mortality of 28.7 per cent. in 369 cases treated by the old methods.

In eclampsia proper the question comes up as to the advisability of at once emptying the uterus. I have always been an advocate of this method of treatment, and in the presence of convulsions have never felt safe until the uterus was evacuated. In the light of recent views on the etiology of the condition, namely, the theory of fetal metabolism, deficient maternal elimination, etc., this procedure seems a rational one, though it is still opposed by some. Williams, quoting statistics from Duhrssen, Olshansen, and Zwiefel, shows that the convulsions ceased immediately after delivery in from 66 to 93 per cent. of the cases, and Zwiefel reports a mortality of 28.5 per cent. by the expectant treatment, against 11.25 per cent. under active treatment. In Zwiefel's last series of cases above referred to the expectant plan of treatment gave 32.6 per cent. mortality, while when immediate delivery was practiced the mortality fell to 15 and even to 11 per cent. He quotes statistics from Bumm, who divides his treatment of eclampsia into three periods—the first, in which narcotics were freely used, with 30 per cent. mortality; second period, when, in addition to narcotics, baths and packs were used, with 30 per cent. mortality, and the third period, in which delivery was practiced as soon as possible after the first convulsion, when the mortality fell to 12 per cent.

The problem of operative delivery is a simple one if the patient be in labor, and the ease with which she can be delivered varies with the amount of cervical dilatation. If, however, labor has not begun, and particularly if the patient be a primipara with a rigid cartilaginous cervix, her immediate delivery becomes a much more difficult problem. In such cases the advistability of Cæsarean section has been agitated. Zwiefel is of the opinion that a vaginal Cæsarean section by the method of Duhrssen, or even the regular Sanger operation, is preferable to a difficult manual or instrumental dilatation. It is my own opinion that cases in which a Cæsarean section is necessary are exceedingly rare, but I do not hesitate to say that this operation is far less shocking to the patient than a difficult *accouchement forcé*. Twice in the last year have I seen patients delivered by vagina that I am sure would have been in better condition had the Cæsarean operation been done. About three months ago, being unable to dilate the cervix in a severe case of eclampsia at seven months, I delivered a dead child by Cæsarean section and the patient made a prompt recovery.

It is needless for me to mention that the well-known eliminating measures must be used in all cases, such as saline infusions, diuretics, catharsis, sweat baths, bloodletting, etc. Concerning the use of veratrum viride, I have little or no experience. That it will check the convulsions is an undisputed fact. I think, however, that we have a more efficient and safer means of treatment in the so-called blood washing by a venesection, followed by infusion.

It is interesting to note in this connection that Dr. Edebohls of New York has practiced his operation of renal decapsulation upon in two cases of puerperal eclampsia, the first about one year ago and the second reported at the meeting of the American Gynecological Society last spring. In the first case the operation was done for convulsions occurring after the birth of the child, and the second in a case having convulsions at the end of pregnancy, spontaneous labor beginning two days later and living twins being born. Both mothers recovered. In the discussion that followed this paper opinions varied. The question is too new to permit further consideration.

In closing I simply emphasize the importance of the closest observation of the eliminating powers of the pregnant woman and the establishment of immediate treatment in the event of this being found deficient. Much can be done in a prophylactic way, but I cannot agree with certain observers who claim that eclampsia is a preventable affection.

FOURNIER AND HIS WORK.

By John Ruhräh, M.D.,

Baltimore.

READ BEFORE THE BOOK AND JOURNAL CLUB OF THE MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND, 1903.

To UNDERSTAND the position that Fournier holds among the French syphilographers we must briefly consider the status of the chair that he held so successfully for many years. Certain specialties have always been viewed with a bad eye by the Faculty of Medicine of Paris and also by the Academy of Medicine. That syphilis is one of these is very evident when we know that for many years Ricord, great as he was, knocked at the door of the Academy, which was not opened to him until 1850.

The subject had not held any very exalted position in previous years, for in the general plan of medical instruction formulated for the so-called *École de Santé* in the year 3 of the new calendar both skin and venereal diseases were put under the professor of *"Pathologie Externe."* In 1809 Petit-Radel was commissioned to deliver a course of lectures on venereal diseases at the clinic of *l'École de Santé*. There was for years afterwards free instruction in both skin diseases and syphilis at the Saint Louis Hospital under such men as Alibert, Bazin, Cazenave, Devergie, Hardy, and Loillier.

The most celebrated teacher, however, was Ricord, who, at the *Hôpital du Midi,* gave for so many years his conferences and clinics either in the wards or ampitheater, or, when the weather permitted, out of doors under the linden trees in the courtyard of the hospital. Fournier was Ricord's favorite pupil, and continued the master's work in medicine after the latter retired from active service. Ricord lived until 1889 and saw the success of that for which he had labored, namely, a chair of syphilis and skin diseases, and saw his favorite succeeding in that chair.

Fournier was fortunate in having such a genial master, for Ricord was beloved both by his patients and by his students. He was a clever operator and an entertaining talker, and never lost his faith in humanity, although it is said that long years of contact with his patients led him to doubt its virtue. It was a current remark that he would have given the vestal virgins a course of blue pills and have treated the chaste Diana herself with mercurial inunctions without asking any questions.

In 1856 the Faculty established a so-called *Cours complementaire des maladies vénériennes,* a sort of a course to fill up the gap in the curriculum. This course was first given by Verneuil and subsequently by Fournier.

Jules Guerin in his report in 1830 asked for a chair of syphilis and skin diseases, but it was not conceded. Later Broca, in 1875, did the same, with no better success, but the request in the report of

Le Fort, in 1878, was favorably received, and the Commission granted an independent chair on December 31, 1879. Fournier was chosen to fill this chair with the title of *Professeur des Maladies Cutanées et Syphilitiques.*

Fournier was born in Paris in 1832, and was a student there from 1852 on. In 1855 he became interne in the *Hôpital du Midi* under Ricord, and five years later, in 1860, received his doctor's degree. His thesis was entitled *"De la contagion syphilitique."* In 1863 he became agrege and hospital physician, having presented as his thesis *"De l'urémie."* In 1867 he substituted for Grisolle at the *Hotel Dieu,* and from there went to the *Hôpital Lourcine,* and subsequently to the *Hôpital St. Louis.* He was made professor in 1879, and in the following year was admitted as a member to the Academy. He was retired from active service two years ago.

Fournier as a teacher was very popular, and his conferences and clinics were always well attended. He gave two regular lectures or clinics in his lecture hall twice a week and daily bedside clinics in the wards. It was my good fortune to attend one of these clinics several years ago. The master sat in his chair surrounded by his assistants and with his chief of clinic at his elbow. Crowded into the little room were students from every country. Every chair was filled, and the late-comers either stood behind along the walls or lolled in the broad windows. Case after case illustrating some particular phase of syphilis was brought in, stripped, and exhibited. About each case there was a word or two of instruction, and then the patient was allowed to circulate among the students for examination.

Personally, he is a Frenchman of the large type, with an open countenance, a pleasant smile and a quick eye. His quiet black garb is relieved by the little red button in the lapel of his coat, showing that he is a commander in the Legion of Honor.

Dr. Osler has recently spoken of the subject of the St. Louis Hospital, so I shall have nothing to say of that, but it would be impossible to give a fair estimate of Fournier without referring to the wonderful museum of the hospital, which is the largest and most instructive collection of models and specimens pertaining to the subject of syphilis and skin diseases. This museum was the idea of Fourcroy, who planned the *École de Santé.* In his plans he wrote that "the parts should be drawn, painted or modeled according to the exigencies of the case." This plan Fournier put into execution. For his teaching purposes when he was at the *Hôpital Lourcine* there was nothing but a few specimens at the *Musée Dupuytren* and a few in the museum of the hospital. When Fournier was changed to the *Hôpital St. Louis* he transported the collection of the hospital and his own, and now the celebrated museum contains:

1. The collections of the hospital, and especially of the St. Louis Hospital.

2. Fournier's private collection.
3. The collection left by Parrot.
4. The surgical collection of Dr. Pean.

The most wonderful are the *moulages,* or colored casts made by Jumelin and Baretta, a description of which is published in the *Iconographie* of the hospital under the title of *"Le Musée de l'Hôpital St. Louis."* As this work was recently shown to one of the other medical societies, I shall not say anything more of it.

Fournier was not only a teacher and a collector, but a writer as well, and it is as an author that this wonderful syphilographer will be known to posterity. It is one of Dr. Osler's favorite remarks—and I quote from memory—that if the student knows syphilis and tuberculosis in all their phases, there is not enough left of internal medicine to stretch the microcephalic head of a fourth-year medical student. Leave out of consideration the question of tuberculosis and cast your eyes upon this vast array of volumes, each one a masterpiece, each filled from cover to cover with the observations of a great scientist, each pregnant with facts, and I ask you whether or not there would not be considerable stretching of the head, even of a megalocephalic practitioner, if he really mastered the subject as this savant Fournier has shown us that it may be done.

It would weary you even to recite the titles of the articles and the discussions which Fournier has given us. I wish, however, to mention the more important works which have done so much to mold our ideas of this protean disease.

The earlier contributions, besides journal articles, were his *"Lecons cliniques de l'hôpital de Lourcine,"* published in 1872, and his *"Lecons sur Syphilis."* In the year following the publication of the first named there appeared his *"Lecons cliniques sur la syphilis étudié plus particulièrment chez la femme,"* a second edition of which was published in 1882. This book, of some 1100 pages, considers the subject of syphilis in women. He formulates at the outset five laws concerning the contagion, incubation, and evolution of syphilis, and after having proved their truth by citing examples from his clinics—and he speaks of tens and of hundreds of cases of this and that—he describes the lesions of the disease, especially the chancre and the secondary lesions as found in the female.

In 1876 he delivered the lectures *"De l'épilepsie syphilitique tertiaire," "De la pseudoparalyze générale d'origine syphilitique."* and many others.. These were collected in 1878 by E. Brissaud.

In 1877 appeared *"Des glossites tertiaires,"* and in the following year *"Nourrices et Nourrisons syphilitiques."*

In 1879 he published *"La syphilis du cerveau."* It would take us too far from our subject to go over either this or any of his other works carefully, but I may remark, in passing, that even if you have not time for a careful reading of this book, it will repay you to glance over the various chapters hastily. He has described the lesions, and has most fascinating chapters on the various clinical forms which he has divided as follows: cephalic, congestive, convulsive or epileptic, aphasic, mental, and paralytic. His pages on wonderful cures reads like a fairy story, and he quotes the well-known wise remark of his old master, Ricord: *"Avec la vérole, tout est possible comme guérison, l'impossible même quelquefois"* ("With the pox everything is possible in the way of cure—even the impossible itself sometimes").

In 1880 he gave to the world his work *"La syphilis et mariage."* He considers carefully in this book the question both before the marriage of the patient and also if the infection occurs after marriage. If anyone wants to be set straight on this vexed question, wants to know his duties as physician, let him read this work. He shows the physician his great responsibility to society in deciding the question of marriage. I may be permitted to quote two short sentences:

"The moment you render your decision it is not the interests of your client alone that you have in hand; your guardian office extends beyond him—indeed, far beyond him. For behind this client there is a young girl, there are the infants to be born, there is a family, there is society, which your prohibition preserves at one single word. You see how enlarged and elevated the mission of the physician becomes, as he is in a way the arbiter of so many united interests."

He does not believe, however, that having had syphilis should prevent a man from marriage for all time. His reply to a friend of his, high in medical circles, who remained a bachelor on account of his having had syphilis, may be cited in this connection: "When one has syphilis, one cures it, and when the force of one's treatment has rendered it inoffensive both for himself and for others, then may he enter into common conditions and have the moral right to aspire to marriage."

In 1882 and 1885 appeared, respectively, *"De l'ataxie locomotrice d'origine syphilitique"* and *"Lecons sur la période preataxique du tabes syphilitique."* These are two notable works of interest alike to the neurologist and the general practitioner. The first is a work part of which was published in 1876, being notes on his lectures of 1875 given at the *Hôpital Lourcine.* Fournier was not the first to call attention to syphilis as a cause of tabes. The venerable Duchenne of Boulogne in 1859 had called attention to the fact with his characteristic clearness, but to Fournier belongs the principal credit for having popularized this important fact. In round numbers from 80 to 90, or even 95 per cent. of the cases of tabes are in syphilitic patients. He called attention to the fact that tabes is almost, if not exclusively, a manifestation of the tertiary period, and that while it may occur at any time in the tertiary period, that it is most liable to come on from the sixth to the twelfth year.

Throughout all his works there run two dominant ideas like the scarlet thread which is said to be woven in every strand of rope that is used by the English navy. These are the responsibility of the physician in cases of syphilis and the necessity for early and energetic treatment. Listen to the words of the master preaching with tabes as a text, and certainly he could wish for no more potent example than the picture he has drawn in his preceding pages: "Treat early syphilis energetically and for a long time, bearing in mind the grave manifestations of the later periods; that is to say, treat it in the primary and secondary stages not for what it is, but for what it may become. In a word, institute at the beginning a treatment sufficiently active and sufficiently prolonged to prevent in every measure which it is possible to fulfill those redoubtable eventualities which I call the *tertiary future.*" And again: "You have had a proof from the statistics which I have placed before you in the course of this exposition, and in which I have shown with evidence both brutal and formal that nearly invariably for almost all of the cases tabes is the consequence of syphilis neglected, of syphilis insufficiently treated at its beginning."

In the second book he points out with great clearness a point of the greatest possible practical importance—that is, the possibility of sometimes making the diagnosis of tabes in its preataxic stage. The book is made up of material proving that there is a preataxic stage of tabes, that it has a many-sided symptomatology, and that the manifestations which make up the symptom complex do not occur always with the same frequence.

In 1886 he published "*Syphilis hereditaire tardive.*" This is of especial interest to the practitioner who deals with children. It is a perfect treasure-house of information concerning all the points that might come under the head of the late symptoms of hereditary syphilis. In connection with this may also be mentioned "*L'heré-ditê syphilitic,*" which appeared in 1901, and deals with the question of the transmission of syphilis from parents to children. All questions relating to this subject are handled in a most authoritative manner.

In 1889 a small work entitled "*La syphilis vaccinale*" was published. This has only a theoretical interest for us in America. It deals with the transmission of syphilis with vaccine virus, which, of course, only occurs where virus from the human being is utilized.

In 1893 his "*Traitement de la syphilis*" was published. In 1902 a second enlarged edition was issued. This volume of 700 pages is thoroughly practical, and it deals with an important subject in a very pleasing manner.

One of the most interesting of his books is "*Les Chancres extra-*

genitaux." It is beautifully illustrated with 12 plates, and the letterpress is in the author's best style. He has considered the entire subject, giving full descriptions of the various forms of extragenital chancres and also many useful points on the diagnosis of them. This was published in 1897.

In 1894 there appeared a work, "*Les affections parasyphilitiques.*" This is a series of considerations devoted to a number of diseases which, while they are not usually associated with syphilis, are yet in many instances related to it, and the views of this veteran syphilographer are of great interest. He states that the older he grows in the study of syphilis the more he is convinced of its far-reaching effects, especially in conditions which are not usually associated in the physician's mind with the disease. These he divides into two classes—those following acquired syphilis and those following hereditary syphilis. In the first category he places, among others, the pigmented syphilide, hystero-neurasthenia of the secondary period, the divers manifestations of neurasthenia of the more advanced stages, tabes, general paralysis, a special form of epilepsy, and a special form of muscular atrophy. In the second class he places a large number of developmental conditions, dystrophies, malformations, infantilism, dwarfism, and many others, also rachitis, hydrocephalus, epilepsy, and juvenile tabes and juvenile general paralysis. Like all the other writings of Fournier, it is charmingly written and full of interest.

Of historical interest is the collection of old syphilographers which he edited with notes. These were the works of three old writers, and include the following: "*Le Mal Français*" (1514) of Jean de Vigo, "*Nouveau câreme de pénitence et purgatoire d'expiation a l'usage des malades affectés du mal Français ou vénérien*" (1527) by Jacques de Béthencourt, and "*La Syphilis*" (1530) and "*Le Mal Français*" (1546) of Francastor.

Lastly, I must mention "*Traite de la syphilis,*" edited by Edmond Fournier, the first volume of which appeared in 1899 and subsequently in 1903. This is a monumental work in which all of Fournier's teachings and views are to be published together. It will be, when completed, one of the most important treatises on the subject, as it contains the opinions of the greatest living syphilographer, and I do not think that I am exaggerating the facts when I say of the greatest syphilographer since old Francastor.

Any man who is unwilling to devote some of his time, energy, and best thought to the prevention of disease and suffering among his fellow-men is not the right man on a board of health.—*Ex.*

While the fool is waiting for an opportunity the wise man makes one.—*Lavater.*

Current Literature

GENERAL SURGERY.

Under the Supervision of Wm. A. Fisher, M.D., Baltimore.

DIAGNOSIS OF CHOLECYSTITIS AND CHOLELITHIASIS. Parker Syms. *Journal of the American Medical Association,* October 15, 1904.

Dr. Syms points out the importance of gallstone disease by the statement that one adult in every ten is the subject of gallstones, 5 per cent. of whom suffer from symptoms. Some of these cases present an easy diagnosis, but a large proportion suffer from vague symptoms, and are treated for gastralgia, gastric ulcer, neuralgia of the gall-bladder, neuralgia of the stomach, etc. The diagnosis of gall-passage disease does not depend upon jaundice, but often can only be made by a careful study of the patient's history, symptoms, etc., and Dr. Syms recommends that every case of chronic indigestion which does not yield to medical treatment should be referred to the surgeon.

The important diseases of the gall passages can be classified as follows:

1. Inflammatory disease of the gall-bladder and gall ducts with or without stone.
2. Gallstones in the gall-bladder and gall ducts with or without inflammation.
3. Inflammatory condition of the region surrounding the gall passages causing obstruction by pressure or distortion.
4. Neoplasm of the gall passages, benign and malignant, with or without gallstones and with or without inflammatory disease.

SYMPTOMS.

Pain.—The onset of pain is usually acute, colicky, or boring situated in the region of the gall-bladder, radiating towards the right shoulder and back. It usually comes on at night when the stomach is empty, and may be relieved by eating or escape of gas from the bowel.

Tenderness.—The point of maximum tenderness is usually situated at the Mayo Robson point, *i. e.,* at the junction of the upper two-thirds with the lower third of a line drawn from the ninth rib to the umbilicus.

Fever and Chills.—An acute attack of pain in the gall-bladder region is frequently accompanied by severe chill and rapid rise in temperature. As a result of gangrene a period may be reached in which pain and tenderness decrease and the temperature and pulse return to normal.

Vomiting.—With the onset of pain vomiting usually occurs of reflex character, and may cause temporary subsidence of the attack by dislodgment of the stone.

Pulse.—In an acute attack the pulse is accelerated, and when complicated with inflammatory disease keeps pace with the temperature.

Collapse.—In severe attacks collapse is often present, and may be a final symptom in peritoneal sepsis.

Tumor.—In some cases a pyriform tumor, varying in size, may be felt below the costal margin, connected with the liver and moving with respiration. Occasionally in thin subjects crepitation of stones may be felt.

Jaundice.—Jaundice is not by any means a constant symptom. It is frequently absent; may be intermittent or persistent, depending on the character and situation of the obstruction. It may be due to the impaction of a stone, inflammatory swelling, malignant disease or adhesions in the neighborhood of the ducts. Persistent jaundice with progressive loss of weight is very suspicious of carcinoma.

Urinary and Blood Changes.—The amount of bile in the urine is useful in determining the degree of jaundice. The count of leucocytes is an aid in determining the presence of suppuration.

Stools.—Complete or partial obstruction of the flow of bile can be determined by examination of the stools, as can also the presence of gallstones.

DIFFERENTIAL DIAGNOSIS.

Gastric Ulcer.—Examination of stomach contents, absence of jaundice and tenderness at the Mayo Robson point, the onset and character of the pain, and a history of hematemesis should make the diagnosis.

Appendicitis.—Only in cases where the appendix takes an upward direction should there be any difficulty. In these cases the history of the onset, with the character, location, and direction of radiation of pain, absence of jaundice, and the general condition of the patient at the end of 24 hours should, in the majority of cases, make the condition evident.

Renal Colic.—In renal colic the pain radiates in a different direction, there is absence of jaundice, tenderness at the Mayo Robson point, and palpable tumor in the gall-bladder region.

Pancreatitis.—The only distinguishing point may be the presence of fat in the stools.

Emphysema and Subphrenic Abscess.—A differential diagnosis can usually be made from the previous history and the physical signs.

Malignant Disease of the Pylorus and Surrounding Structures.—A careful history, with examination of stomach contents, may make the diagnosis clear. In cases of malignant disease and other obscure conditions an exploratory incision is often necessary in order to make a positive diagnosis.

THE RELATION OF CHOLELITHIASIS TO DISEASE OF THE PANCREAS. Eugene L. Opie. *Journal of the American Medical Association,* October 15, 1903.

Opie notes some of the anatomical peculiarities which have an important bearing on the relation of the liver to the pancreas. In 10 per cent. of persons the common bile duct and the duct of Wirsung terminate side by side at the summit of the bile papilla. In nine-tenths of all individuals the duct of Wirsung is larger than the duct of Santorini. Although there is an anastomosis within the glands between the duct of Wirsung and the duct of Santorini, the connection is so small that one is not capable of acting as an outlet for the other. Recent experiments have shown that the bile increases the digestive efficiency of the pancreatic ferments, and especially the fat-splitting ferment. This fact may explain the severity of the pancreatic lesion when bile is forced into the pancreatic ducts.

The association between cholelithiasis and acute hemorrhagic pancreatitis has been shown by Opie in a number of cases previously collected from the literature and in subsequent cases. In a number of these cases a calculus was found in the terminal portion of the common duct, and probably caused a projection of bile into the ducts of the pancreas. There are, however, a number of cases in which no calculi have been found, but it is possible that in these cases the calculus or calculi had passed into the intestine. A case in point is cited in which a circular dilatation was found in the common duct one centimeter from its termination, suggesting that a stone had previously occupied this position. That acute hemorrhagic pancreatitis can be produced by the injection of bile into the pancreatic ducts has been proved by animal experiments, and clinically cholelithiasis seems to be the causative agent by which this takes place. Suppurative pancreatitis is caused by the invasion of micro-organisms, which may be due to the presence of gallstones that have previously caused an infection of the bile passages. Total or partial occlusion of the pancreatic duct by a stone in the diverticulum of Vater may favor the entrance of bacteria into the duct.

Chronic pancreatitis is a more common complication of cholelithiasis than the acute lesions. Frequently in operations for cholelithiasis the head of the pancreas is found to be indurated. This condition may be brought about in two ways—a large stone may occlude the opening of the pancreatic duct and produce an interstitial inflammation similar to that produced by ligature of the duct, or an acute inflammation of the bile passages due to the presence of gallstones may be transmitted to the pancreas by way of its larger duct and produce chronic changes.

In conclusion, Dr. Opie says: "Whenever a biliary calculus passes through the diverticulum of Vater into the duodenum the pancreas is subjected to the danger of injury, the character and extent of which are dependent on the size of the calculus and the duration of its impaction."

THE TREATMENT OF CHOLECYSTITIS AND CHOLELITHIASIS. Lucius W. Hotchkiss. *Journal of the American Medical Association*, October 15, 1904.

Dr. Hotchkiss opens his paper by mentioning the growing tendency of the profession to consider disease of the bile passages as surgical affections. This is due largely to the fact that the surgeon has been able to extend the knowledge of the pathology by recording conditions found at the operating table, and thus establishing the diagnosis on a firmer basis.

He divides treatment into two classes—first, medical or palliative; second, surgical or medical and curative.

Medical treatment may be justified in certain cases, owing to the fact that surgical diagnosis is often incomplete and operative attacks are largely exploratory.

Herter has shown that the bile salts hold the cholesterin in solution in the bile; consequently their administration should prevent gallstone formation. In cases of cholecystitis the amount of cholesterin is increased and the amount of salts decreased; consequently the administration of sodium glycocholate would be indicated theoretically.

Heppel thought that the solution of gallstones ought to take place by the administration of alkalies and bile salts with a diet rich in fats.

Olive oil acts only by relieving the congestion of the intestine, thus allowing better drainage of the bile ducts.

In the milder cases of catarrhal cholecystitis and cholangitis a course at one of the famous "cures," notably Carlsbad, may be of benefit.

None of the above treatments can be said to produce a solution of gallstones *in situ*. The principal point to determine is what cases should be treated expectantly and what surgically.

Although the number of cases "treated by procrastination and direct encouragement of the opium habit" is steadily growing less, still there is room for a better understanding between the internist and the surgeon as to the limitations of medical and the indications for surgical treatment. The promise of better results from surgery of the gall-bladder in the future lies not so much in improvements in technic as in early diagnosis by the internist and a recognition of the fact that the danger in operation depends principally on delay. Statistics now show a sufficiently low mortality in cholecystostomy and primary cholecystectomy as a prompt, efficient and safe measure in any proper case, and as the only radical and curative means now known.

After reviewing the progress of the surgery of the bile passages and the part contributed to it by American surgeons, Hotchkiss passes on to a consideration of the treatment of cases as they present themselves.

Cases seen in the first and mild attack, where the inflammation of the gall-bladder quickly subsides under medical treatment, and cases with subsequent mild attacks, during which a stone or stones have been passed and the intervals between attacks are long, are cases for observation.

In cases with severe and frequent attacks nothing is to be gained by delay, and cholecystostomy or cholecystectomy should be performed before the general health is affected and the opium habit is established.

Early operation, either cholecystostomy or cholecystectomy, is demanded in those cases which, mild at the outset, develop signs of local peritonitis and sepsis.

It is usually advisable to delay operative treatment in acute and recent obstruction of the common duct by a calculus in order to allow the inflammatory swelling to subside and the stone to pass. In case the stone does not pass and the signs subside, choledochotomy and removal of the stone is indicated. It is advisable in all these cases not to suture the duct, but to drain in order to allow any small stones to escape and to prevent cholemia.

Common duct cases are the most dangerous, as they are the more often neglected and are the subjects of chronic jaundice, which greatly increases the danger of operation from hemorrhagic oozing.

CONCLUSION.

In conclusion, it may be said that medical science thus far has not discovered a solvent for gallstones nor devised any means other than surgical for the certain drainage of the gall-bladder and biliary ducts.

REVIEW IN PATHOLOGY.

Under the Supervision of José L. Hirsh, M.D., Baltimore.

EXPERIMENTAL STUDIES ON THE ETIOLOGY OF ACUTE PNEUMONITIS. Augustus Wadsworth. *American Journal of the Medical Sciences,* May, 1904.

As a result of the numerous and varied researches of other observers it has been determined that the bronchi and lung under normal conditions are practically free from micro-organisms; that the secretions of the upper respiratory tract in both health and disease often harbor the bacteria commonly found in pneumonia, namely, the pneumococcus, the streptococcus, the staphylococcus, and the pneumobacillus; that the incitants of pneumonia may be carried to the lung by the lymph channels, inducing an interstitial pleuro-pneumonitis, or by the blood-vessels, giving rise to secondary metastatic processes, or, as is usual, by the air passages, inciting the various lesions of exudative pneumonitis, of which two main types, the broncho-pneumonic and the diffuse lobar, are recognized; and, finally, that the broncho-pneumonic lesions, whether arising in man or induced experimentally in animals, may be incited by a great variety of bacteria, most frequently by the pneumococcus or the streptococcus, whereas comparatively few species of bacteria give rise to diffuse lesions in animals, and in man practically but one species, the pneumococcus, ever attains the necessary specialization for the incitement of lobar pneumonia. In the researches of others patchy or circumscribed lesions comparable to the broncho-pneumonia of man have been induced experimentally with comparatively little difficulty. Previous attempts to induce diffuse lobar lesions in animals, though successful in a few exceptional instances, have failed to determine the exact conditions under which the lesion develops, and offer no reliable method of securing typical pneumonic processes.

By means of actively-controlled series of experiments which allowed a precise comparison it was possible in the writer's researches to determine the effect of increasing or diminishing the virulence of the incitant, the pneumococcus, in systemically-predisposed, in locally-predisposed, and in both locally and systemically predisposed animals. These experiments show that the excitement of diffuse lesions in the normal rabbit is extremely uncertain, and only possible in the predisposed rabbit when both the general and local susceptibility are increased and when organisms of comparatively low virulence are used. Thus, and owing chiefly to the fact that the lung surface acts as a barrier to infection, the development of an acute exudative pneumonitis offers an especial clear example of the nice balancing of the essential conditions determining infection. These conditions are, on the one hand, the specialization of virulence of the incitant, and, on the other hand, the animal susceptibility, both local and systemic. Organisms of low virulence induce evanescent bronchial reaction; more virulent organisms, by local infection, give rise to the more typical broncho-pneumonic lesions, while organisms of still greater virulence, if confined to the lung, incite diffuse processes of the lobar type, but if not so confined, and bacteriemic infection occurs, the lung lesions are less marked and of the broncho-pneumonic type. The extremely fine balance of these conditions essential to the formation of lobar lesions in normal as well as predisposed animals is as yet for practical purposes beyond experimental control.

Finally, as a result of these systemic researches on normal and predisposed animals, an entirely new procedure was adopted—the preliminary immunization of the rabbits—so that extremely virulent cultures of pneumococci can be used without giving rise to bacteriemic infection. The experiments with this procedure showed that diffuse exudative lesions comparable to the lobar pneumonia of man may be incited experimentally in the immunized rabbit, and that in securing this result there are but two chief variable factors—

the virulence of the incitant and the immunization of the animal—both easily and accurately controlled by the routine technic of the modern laboratory.

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A Fatal Infection by a Hitherto Undescribed Chromogenic Bacterium, Bacillus Aureus Fetidus. Maximilian Herzog. Government Laboratories, Manila, No. 13, 1904.

The observation recorded in this paper refers to a case of fatal human infection by a hitherto undescribed bacterium which is evidently not very pathogenic under ordinary conditions, and probably, as a rule, is a harmless saprophyte, but which, as in this instance, may become parasitic and lead to a fatal issue.

The case reported is that of a Filipino, 40 years of age, who was sent to the morgue supposed to have died of plague.

The anatomical diagnosis of the post-mortem findings was as follows: Passive congestion of the kidneys, acute interstitial hepatitis, hypertrophy of the inguinal glands, slight hypertrophy, and congestion of the inguinal glands.

Two tubes inoculated from the liver contained pure cultures of a short, small bacillus, which had produced a golden-yellow pigment. One tube from the heart's blood contained the same organism, but it was contaminated. None of the tubes developed the plague bacillus.

Description of the Bacillus Isolated.—Morphology: Short bacillus with rounded ends. They are from 0.6 to 2 microns long. In thickness the bacilli vary from 0.55 to 0.8 micron. The organism frequently presents itself as a diplobacillus. It is often hard to distinguish them from diplococci. The organism possesses a capsule which can be demonstrated by Muir's method. Spore formation is not observed. It is non-motile.

The organism on all solid media which were tried produces an intense golden-yellow pigment which is practically identical in color with that formed by the staphylococcus aureus. Distinct colonies in 20 per cent. gelatine plates are quite difficult to obtain, because the organism liquifies the media with great rapidity. Individual colonies are best studied on agar plates. On agar the organism forms a moist raised golden-yellow growth after 24 hours. The individual colonies are round and likewise moist and raised, with a somewhat undulating surface. The margins are smooth. In spreading the colonies become confluent. No gas formation occurs in glucose media. On lactose litmus agar the color begins to turn after 24 hours, and is quite distinctly red after 48 hours. The organism develops typically under anaerobic conditions in either a nitrogen or hydrogen atmosphere. All cultures, whether aerobic or anaerobic, have a very fetid, cheesy, and somewhat cadaverous smell. The thermal death-point of the organism is 62° C. Exposure of 10 minutes at this temperature destroyed all the bacilli, while 61° C. acting for 10 minutes left a number alive. The name bacillus aureus fetidus selected for this micro-organism emphasizes two of its prominent characters—its chromogenic and its malodorous properties.

The bacillus is readily stained by the watery aniline stains, and remotely resembles the pseudo-diphtheria bacilli, also those of the plague. From the animal experiments the bacillus does not seem to be very pathogenic.

The paper ends with the following conclusions: The bacillus aureus fetidus, the bacterium described in this paper, has, as appears beyond doubt, been the cause of death in the case herein reported. Experiments showed that the bacillus is not a highly pathogenic micro-organism, because single inoculations of moderate doses brought about only a very slight reaction in the animals experimented upon. Perhaps inoculations repeated during a longer period might bring about a more serious result. It is very probable that the bacillus aureus fetidus is ordinarily a saphrophyte. In the case reported it may simply have lived for some time in the necrotic tissue of a neglected ulcer, and may have slowly become modified in these environments until it finally gained entrance into the tissue of the patient. From the lymphatic system it entered the blood current, reached the liver and kidneys, and led to subacute and somewhat chronic interstitial fibroid processes and parenchymatous degeneration.

* * *

ON THE CARDIAC AND VASCULAR COMPLICATIONS OF TYPHOID FEVER. Wm. S. Thayer. *Mobile Medical and Surgical Journal,* July, 1904.

In a quite lengthy and valuable article, presenting numerous tables, charts, and statistics, Thayer closes his article with the following conclusions:

1. Typhoid fever is a disease which, from a clinical standpoint, is often associated with symptoms suggestive of a grave weakening of the heart muscle. These changes, whether due to direct action of the typhoid poison on the heart or to impaired nourishment from vasomotor paralysis, result in a considerable portion of cases in a temporary insufficiency of the mitral valve as indicated by the appearance of apical systolic murmurs, which are not infrequently transmitted to the axilla. These murmurs develop especially at the height of the disease, during the latter part of the first and in the second, third and fourth weeks, and disappear usually with convalescence. Sometimes, however, they may persist. Twelve out

of 188 cases of typhoid fever which were followed from three months to 14 years after convalescence showed conditions suggestive of organic cardiac lesions. Over one-fifth of the old typhoids in whom during their illness a systolic apical murmur was detected showed on subsequent examination evidences of organic disease. The average systolic blood pressure was higher in every decade among the old typhoids than in healthy individuals who had never had the disease.

2. Endocarditis, while not a common complication of typhoid fever, is probably more frequent than is commonly supposed. It was present, without being suspected, in three out of 95 cases coming to necropsy at the Johns Hopkins Hospital, while in three further cases out of 1163 the clinical symptoms suggested its presence.

3. Pericarditis is an unusual and unimportant complication of typhoid fever. Three instances only were noted in our 1458 cases.

4. Phlebitis and venous thrombosis is a frequent complication of typhoid fever, occurring in over 2.6 per cent. of our cases. The onset occurs usually in the third week or later, and is ushered in in most cases by fever, leucocytosis, and local pain. Not infrequently the fever and leucocytosis may precede the localizing symptoms. The phlebitis is, in the great majority of cases, localized in the vessels of the lower extremity, and is especially frequent in the femoral veins. Thrombosis of the iliac and femoral veins is always a serious complication. Although the immediate dangers—extension of the thrombus, pulmonary embolism—are not great, the after-results are often grave.

5. Arteritis and arterial thrombosis are more frequent complications of typhoid fever than is generally supposed. These complications appear to be especially in the cerebral vessels, although they may occur in the extremities. The onset may occur in the height of the disease, but is commoner in the third week or later. In the extremities arterial thrombosis is commonly followed by gangrene, in the cerebral vessels by hemiplegia.

6. A survey of our pathological material would suggest that typhoid fever may not be an infrequent cause of focal arterio-sclerotic changes.

7. While the deleterious influences of typhoid fever upon the cardio-vascular system is not as great as that of acute rheumatism, it is probable that post-typhoid cardio-vascular defects are not uncommon.

* * *

On the Pathogenesis of Chronic Gastric Ulcer. W. G. MacCallum. *American Medicine*, September 10, 1904.

As early as 1855 Virchow expressed the idea that the condition of chronic gastric ulcer is due to disturbances in the circulation of the stomach—embolism, thrombosis, arteriosclerosis, aneurism formation. Indeed, any change which might result in the cutting off of the blood supply from a portion of the stomach could bring about the death of that portion and its subsequent digestion. Muller and others found that ligature of the gastric artery had no effect on the mucosa. The idea that in the oblique funnel-shaped ulcer we have the gap left by the destruction of the area of the tissue supplied with blood by the artery at the apex is not supported by the strongest evidence. Hauser regards the ulcer as comparable to a torpid varicose ulcer of the leg in which the sluggishness of the circulation impedes healing. Muller produced ulcers by causing a chronic venous congestion by tying the portal vein, and it was Keys' idea that spasm of the muscles produced such a passive venous congestion and favored ulcer formation. Talma produced hemorrhagic erosion by stimulating the vagi, which he explained as due to the infarction and digestion of portions of the stomach rendered extremely anemic by the violent muscular contractions thus set up. More recently Van Yzeren has produced deep gastric ulcers by cutting the vagus below the diaphragm. Many attempts have been made to explain the genesis of the ulcer on the grounds that mechanical, chemical or physical influences have destroyed the tissue. Several clinicians claim to have seen round ulcers develop following severe contusion or violent blows on the stomach. All experiments along this line have produced erosions which healed very rapidly. Many efforts have been made to produce a more permanent ulceration, but none have been crowned with marked success.

Owing to the well-recognized frequency of hyperacidity in cases of gastric ulcer, attempts have been made to assign a great importance to this condition in maintaining the existence of the ulcer. Certain authors have looked upon gastric ulcer as due to or at least maintained by bacterial infection.

The author discusses the old question as to why the stomach does not digest itself. The most recent theory suggested is that of Weinland, who studied intestinal parasites by making an emulsion of their pulverized bodies and adding to this digestive fluids in which fibrin was placed. Digestion was markedly retarded. From his studies Weinland concludes that such intestinal parasites produce an antiferment which protects them from the digestive juices. So in the gastric mucosa there is an antipepsin which is intimately associated with the cells and is extracted far less easily than the pepsin. Weinland is inclined to apply the idea to the gastric ulcer, conceiving the condition as a loss of power to produce antipepsin and the consequent destruction of the epithelium. While the idea is tempting, it requires further proof.

Society Reports.

THE JOHNS HOPKINS HOSPITAL MEDICAL SOCIETY.

MEETING HELD OCTOBER 17, 1904.

Dr. Joseph C. Bloodgood was elected president, and Dr. C. H. Bunting, secretary, for the ensuing year.

Dr. Stephen Watts exhibited a patient on whom a plastic operation had been done for a wound of the lower lip and chin. The boy, 15 years old, had been bitten by a circus pony, and the soft parts, from the mouth down, removed, including the periostrum. The wound was a clean one. A flap was dissected from the upper arm, its under surface and the raw area left by it being covered by a graft taken from the thigh. After sufficient time had elapsed for the establishment of circulation in the flap it was sutured to the face wound, its pedicle being still left attached to the arm, which was bound up to the chin by a plaster dressing. At the end of three weeks the flap was gradually separated from the arm, the operation being done in several sittings. Photographs of the patient before, during and after the treatment were exhibited showing the change from a terrible deformity to a fairly normal appearance.

Dr. Cullen reported three gynecological cases. The first, a woman of 58, complained of abdominal enlargement, pigmentation, and loss of weight, for which no cause could be discovered. There was a small mole on the neck. The abdomen was opened and an umbilicated new growth of the liver and omentum found which proved to be a melano-sarcoma with areas of pigmentation. Metastasis from the mole in the neck seemed probable. The second case, a woman of 42, had been struck on the abdomen, and after three weeks had begun to have a discharge from the umbilicus, around which there was a collar of induration. The inguinal glands became enlarged. The involved area about the umbilicus was excised, and the omentum and glands of the groin removed. The tissue proved to be adeno-carcinomatous, and the probable primary site was the umbilicus. The third case was one of a patient who had had a carcinomatous kidney removed one year ago. After 17 months of health a tumor was noticed developing in the right side, which rapidly increased in size, caused loss of weight, and was accompanied, on admission, by a temperature of 102½. On opening the abdomen the tumor was seen bulging under the liver. It was removed with a knife, after clamping the cystic duct, sutures being placed with a dull needle as the cut was made. The tumor proved to be a metastasis from the carcinomatous kidney. The patient convalesced without event, and was discharged four and one-half weeks after operation. Macroscopically there was apparently little liver destruction. Round, blunt knife-blade needles were used in this case, following the suggestion of an assistant of Miculicz, who showed that with proper needles the liver could be sutured almost with impunity, all vessels being pushed aside and no bleeding occurring from the stitch-holes. Dr. Futcher, in the discussion, referred to Dr. Keen's paper on the importance of pigmented moles, and reported a case of a colored man with a mole on the right scapula whose axillary glands showed melanotic sarcoma.

Dr. Briggs of Washington read a paper on spontaneous phlebitis. A review of the literature and a consideration of his own cases led him to the conclusion that there exists a definite group of phlebitis cases characterized by the absence of any inflammatory cause, by a progressive and relapsing course, by frequent occurrence in the veins of the extremities, by the clinical similarity to gouty phlebitis, but by the absence of symptoms of the lithemic diathesis. The case reported first was said to be characteristic of the group, and the symptoms were given in detail. The patient was a man 22 years old and in splendid health. The family history was negative for gout. The patient had had typhoid and pneumonia, but had never done any particularly hard work. In May, 1901, he suddenly awoke with stiffness of the left ankle, followed, in a day or so, by tenderness over the internal malleolus. The internal saphenous vein could then be felt as a cord, and redness and edema, with some lameness, appeared. The acute symptoms subsided in two weeks, a palpable cord being left at the site of the original trouble. In July there was a second attack quite similar to the first except that it involved the vein higher up. The onset was sudden and without cause; there were redness, tenderness, swelling and pain, and at the end of two weeks the acute symptoms completely subsided, leaving a palpable cord behind. General health remained good and there was no leucocytosis. In September, October and December similar attacks occurred, the involvement being gradually higher until Poupart's ligament was reached. The onset was always at night, and there was never any warning. Disability was great, edema never marked and the hemoglobin constantly high. No treatment was used except cold applications, and the possibilities of embolism were completely disregarded. At present there is a palpable cord reaching to the middle of the thigh. No edema is present, but there is occasionally a sense of fatigue. About 350 cases of spontaneous thrombosis are reported in the literature, but all of these are probably due to fevers, anemia or cachexia. Tuckwell and Paget, indeed, make the statement that every so-called spontaneous phelbitis is really gouty, a venous thrombosis being, for these authors, as pathognomic as a tophus, and phlebitis being considered not infrequently the sole manifestation of uric-acid anemia. Dr. Briggs, however, thinks that his own case and at least five others in the literature must be considered as a separate group, the absence of any signs of gouty diathesis, the relapsing and progressive course, the obscure etiology and the absence of fever, anemia and cachexia as the cause being the symptom complex common to all of them. No study of the pathology has ever been made, and any explanation must therefore be based on purely theoretical grounds. It is possible that the first change is in the formation of a sclerosis in the venous wall, and that the patients exhibit an anatomical, rather than a clinical, diathesis. The mortality is probably not high. Rational treatment would seem to be ligation of the saphenous vein above the process in order to prevent the formation of embolus. By the progressive nature of the disease the vein is doomed, so that ligation would only accomplish what the malady itself would lead to later.

Dr. Macallum showed several pathological specimens. The first was the heart of a man who had died suddenly after a very long illness with endocarditis, the absence of sweats and a relatively low temperature being the features of the case. The right auricle was found free at autopsy, but there were several vegetations on tricuspid valve. The left auricle was covered with mural vegetations, the cordae tendinae were broken, and there were vegetations at the points of closure of the aortic valve. In the left coronary artery there was a cordlike plug similar to the vegetations in the heart. It lay loose in the vessel; there was no propagation of the clot, and the vessel wall was intact. These features, together with the sudden death of the patient, seemed to indicate that an embolism had occurred. This condition is indeed rare, and Marie denies it entirely. Welch, however, holds such a position too radical. The cause of the sudden stoppage of the heart after occlusion of the coronaries is not entirely understood.

The intestines were shown of a man who had died after a long illness with dysentery. An abscess had formed in the left iliac fossa connecting with the bowel, and vesico-rectal fistula had later occurred. Cystoscopic examination had shown what was apparently carcinoma of the bladder. This proved at autopsy to be diffuse papilloma, and throughout the intestine were found little tags of polypoid growth which looked like the remaining bridges left by destruction of the intervening mucosa. The appearance suggested that such may be the origin of certain intestinal polyps. Dr. Cole said that he had seen several patients who gave a history of long dysentery, and who showed, on proctoscopic examination, many polypi in the bowel. They had been diagnosed "polypoid colitis," but it was thought possible, in the light of Dr. Macallum's case, that the papillomata might have been secondary, and not causative.

Dr. Thayer showed the heart from a patient who had died with malignant endocarditis. He had had a mitral insufficiency for many years, but had kept busily at work with a systolic murmur audible with the ear a slight distance from the chest. Compensation was then fair, and there were no signs of aortic disease. In April, 1904, the patient was much overworked and began to show a slight steady fever without other symptoms. Fresh endocarditis was suspected. A soft aortic systolic mummur soon appeared and the heart began to enlarge; and the patient subsequently died, as the specimen showed, with acute aortic disease. Whenever an old heart case begins to show a slight steady fever the prognosis is bad.

It is a luxury to pity oneself, but woe to him with whom it becomes a necessity.

BALTIMORE CITY MEDICAL SOCIETY.

SECTION OF CLINICAL MEDICINE AND SURGERY.

MEETING HELD OCTOBER 21, 1904.

Dr. Baer reported seven cases showing the results of operative and non-operative treatment in congenital dislocations of the hip. The first patient, a girl of five, had showed a dorsal dislocation of the left hip with a shortening in Bryant's line of three centimeters. Continuous traction was applied for five weeks, and then by means of forcible extension (Bradford's method) the head was brought to the acetabulum and replaced by the Lorenz method. Six months after the operation the position was good, and the stiffness then present yielded later to massage. Preliminary extensions and the use of the extension apparatus at operation proved useful in this case. The functional result had been perfect.

The second patient, a girl of five and one-half years, with shortening, external rotation and atrophy, had been operated on by Lorenz at the Johns Hopkins Hospital. The leg was flexed to 90 degrees and abducted, the adductor fibers being ruptured. The posterior muscles and the tissues in front of the joint were then stretched and a plaster dressing applied, the leg being flexed on the thigh, and the thigh on the abdomen, and the leg fixed posteriorly to the plane of the body. The acetabulum was poor, and Dr. Lorenz gave a bad prognosis. Marked extravasation of blood occurred in the leg and persisted for four weeks. The original dressing was removed in nine and one-half months and the leg redressed. The anatomical result had been perfect (Bryant's line the same length on the two sides). and the functional result was proven by the exhibition of the patient to be equally satisfactory.

The other patient treated by Dr. Lorenz on the same day had not done so well. The girl was eight and one-half years old, and the case a difficult one. On removal of the plaster, nine months after operation, the head was found bulging in the groin three and one-half centimeters and below medial to the anterior superior spine, showing that an anterior transposition had taken place. The patient was unable to stand. Operation was done and a rent in the capsule found through which the head of the femur had slipped. The head was replaced and the functional result is now good. There is, however, about two centimeters shortening—possible to correct by a bloody operation.

In the fourth case reported the head had been brought to the ascetabulum by preliminary extension, and reduction then accomplished under ether by the Lorenz method. Six months later the head had slipped out, and this again occurred after a second reduction. At operation a rudimentary ascetabulum was found and excavated, the head being replaced and the leg put up in *internal* rotation, to overcome anterior bending of the neck.

The fifth case showed a brilliant result. The patient was a girl of 18 who had suffered with great pain and disability from double congenital dislocation. She was markedly swaybacked and walked with a monstrous waddle. Both hips were treated by the open method, new acetabula being formed and preliminary traction being used. The patient had had a very good functional result, in spite of the marked coxa vara of both legs. Lordosis, pain and disability had entirely disappeared.

One patient was shown whose convalescence after an open operation had been complicated by the formation of adhesions, resulting in false ankylosis of the hip-joint. These had, however, been broken up under ether, and the final functional result was good, though a shortening of one-third inch had persisted.

A seventh case showed a fair but not perfect functional result after the bloodless Lorenz method. In this patient anterior transposition of the head had occurred, due to anterior bending of the neck and failure to put the leg up in *internal* rotation. The lessons taught by this series of cases are that operative procedure is the method of choice when anterior bending of the neck is present; that preliminary traction is always advisable; that good results may be expected even in older cases; that the bloodless method is the better method in cases under six years of age (except when an anterior twist of the neck has occurred), and that the bloody method is the operation of choice after the sixth year.

Dr. Trimble showed a patient who had come to him with a history of a sudden attack of great abdominal pain 10 days previous. The man was very ill when seen, pulse was 130, temperature high, abdomen distended. Constipation had been marked, but there had been no vomiting. The lower border of the liver reached below the umbilicus, and the heart and lungs were pressed up and out. A diagnosis of abscess was made. Posterior incision under light anesthesia showed an abscess containing pus and air under the diaphragm. Colon bacilli were isolated from the pus. The abscess was thoroughly evacuated and a tube inserted for drainage. Temperature soon fell and the liver receded, but signs of pleurisy appearing, an aspiration was done and no fluid obtained. A rib was then resected and serum and pus found in the pleural cavity. Both wounds healed without event, and the patient is now well except for retraction of the chest and a thickened pleura. Dr. Trimble also referred to another case of subdiaphragmatic abscess, and Dr. Watson reported two similar cases, in one of which a perinephritic abscess just under the diaphragm had shown as the first symptoms pain in the hip and a slight limp.

Dr. Wholey reviewed the subject of tubercular cystitis in connection with a case of his own in which the condition was possibly primary in the bladder. This disease, according to Motz and Hallé, never originates in the bladder, for the reason that concomitant lesions elsewhere are constant, vesical lesions are always less advanced, and hence of an obviously later origin than those found in other portions of the genito-urinary tract, and the vesical lesions are usually found near the vesical orifices (urethral or ureteral). The disease varies in its course from a slow, almost benign condition to an acute and very serious one. Sometimes it occasions no symptoms, and is not infrequently first discovered at the examination for life insurance. Spontaneous recovery has been reported by Paget. The treatment is difficult. Some cases are obviously medical and others surgical. In the intermediate group of cases it is not easy to say what should be done. At a recent French congress in a discussion of the subject it was concluded that local medical treatment is rarely successful; that curettement, etc., are ineffective; that bladder tuberculosis is always secondary, and that nephrectomy is the only treatment for tuberculosis anywhere in the genito-urinary tract. The failure of surgical treatment is due in part to inability to detect the lesion early. When the disease is limited, curettage, excision, or cauterization may be of use. Dr. Wholey's patient was a man of 18, with slight tuberculous family history, in whose urine albumen had been found one month earlier by an insurance examiner. Frequency of micturition then developed without pain. The lungs were free, the kidneys impalpable. The urine contained a small amount of blood and pus and many tubercle bacilli. Under irrigations of boracic and carbolic acids and injections of strong bichloride solution frequency had become much less marked, the urine clearer and the bladder capacity greater. There was no involvement of the prostate or epididymis, and the case might be one of primary tubercular cystitis, though no cystoscopy had been permitted by the patient.

Book Reviews.

MEDICAL DIAGNOSIS. Special Diagnosis of Internal Medicine. A Handbook for Physicians and Students. By Dr. Wilhelm v. Leube, Professor of Medicine and Physician-in-Chief to the Julius Hospital at Wurzburg. Authorized translation from the sixth German edition. Edited, with annotations, by Julius L. Salinger, M.D., late Assistant Professor of Clinical Medicine in the Jefferson Medical College, and Physician to the Philadelphia Hospital. With five colored plates and 74 illustrations in the text. Cloth, $5; half leather, $5.50. Sold only by subscription. New York: D. Appleton & Co.

Dr. v. Leube's book on "Medical Diagnosis" is properly to be considered a "special diagnosis" according to the more precise system of American nomenclature, in that it only describes symptom complexes as they appear in special diseases rather than describing individual symptoms *seriatim*, as is customary in most American books on medical diagnoses.

The former method of dealing with disease represents a synthetic rather than an analytic process of induction—a process of reasoning which we avoid as far as possible in medicine, though we must still place absolute dependence upon it in many diseases.

The book is written with the careful thoroughness and precision for which we owe so much to the Germans, and which is only possible in a writer of rare scientific attainments and extensive clinical experience.

Dr. v. Leube is a safe guide to follow over the beaten paths of clinical medicine, as he possesses the clear balance and logic of a mature and conservative mind. Dr. v. Leube's style is rather that of a careful, logical discussion than a vivid word-picture of disease, which, while it may not appeal strongly to the memory and imagination, is at least convincing to the mind.

The illustration of many organic lesions by special cases later subjected to autopsy certainly increases markedly the practical value of the book.

Many of the symptoms, particularly those of obscure or complex origin, are demonstrated by means of small-type paragraphs as far as the present state of knowledge permits. Although the propositions leading to these demonstrations are necessarily largely theoretic, the attempt to place all symptoms on a basis of demonstration possesses many advantages.

Certain individual pathological conditions are worthy of brief review. The first of these in importance is probably albuminuria. The discussion of this symptom is worthy of the diagnostician's close attention by reason of its importance and a certain confusion in the minds of many clinicians as to its significance. Dr. v. Leube forcibly impresses the fact that a diagnosis of "functional" or "physiological" albuminuria is justified only in complete absence of the conditions usually associated with sensible pathological alterations of the kidneys not only as regards dropsy and uremia, but as regards any evidence of cardiac or vascular changes.

Excellent tables of differential diagnoses are given for diseases of the kidney and diseases of the liver.

The discussion of valvular diseases of the heart is to be particularly commended, notwithstanding the excessively formal and mechanical view taken of the functions and lesions of the heart and the somewhat too definite and precise line drawn between its various valvular defects. Great stress (as is proper) is laid on the pulse, and the various phases of morbid cardiac action are illustrated by a complete set of sphymographic tracings.

In the consideration of pulmonary tuberculosis Dr. v. Leube adopts a classification more in accord with the clinical symptoms and pathological findings than that usually employed. These three stages are, first, catarrh of the apices, with tubercular granulations; second, tuberculous peribronchitis and caseous pneumonias; third, tubercular excavation with the production of vomicae.

The section on diseases of the nervous system is illustrated with standard plates, and has been brought up to the modern standard of medical knowledge. Each section is introduced by an anatomical and physiological description of the nervous constitution of the part considered and the general symptoms to be found in lesions of the region.

Possibly the most valuable features of the book is the discussion of the symptoms not only as regards their frequency, but their value and significance as they appear in certain morbid conditions. The realization of the significance and value of clinical symptoms is the most difficult part of diagnoses, and failure is probably more often met with from a deficiency on this point than from any other error of reason or judgment.

The Pathology of the Eye. By J. Herbert Parsons, B.S., D.Sc. (Lond.), F.R.C.S. (Eng.), Assistant Ophthalmic Surgeon, University College Hospital; Curator and Pathologist, Royal London (Moorfield's) Ophthalmic Hospital. Vol. I.—Histology. New York: G. P. Putnam's Sons; London: Hodder & Stoughton.

With the completion of this work another important gap in ophthalmic literature will have been closed. We welcome the appearance of the first volume and impatiently await what is to follow. It seems strange that such a task has not been assumed before, but such is the fact, and such references to the pathology of eye affections as may be found in the text-books of ophthalmology have been for the main part written by authors who were not well trained in pathological work. Even in the exceptional instances, where the writers were competent pathologists, only brief space could be allotted to this portion of their subject, and so the oculist in search of such information has had no adequate and authoritative collection of knowledge of this sort to which to appeal.

Dr. Parsons presents in a very satisfactory manner what is known of the pathology of eye diseases at the present time. For these facts the practicing ophthalmologist will be duly grateful, but the student of this branch of medicine who is desirous of pursuing laboratory investigations should be even more thankful, since the direction of future research work is thus clearly pointed out.

We gladly accept the opportunity of stating our appreciation of this volume and of assuring Dr. Parsons that a full measure of success awaits him if the same standard is maintained throughout the series which is to follow.

The first volume deals only with the histology and pathology of the lids, conjunctiva, sclera, cornea and iris. The subject-matter is presented in a thorough and up-to-date manner, the illustrations are excellent, and the work of the publishers is worthy of praise—good, heavy paper, large, clear type, and the whole neatly bound.

Three more volumes are to follow before the work is finished.

H. O. R.

STRABISMUS, OR SQUINT, LATENT AND FIXED: A Supplement to the "Errors of Refraction." By Francis Valk, M.D., Professor of Diseases of the Eye, New York Post-Graduate School and Hospital; Fellow of the New York Academy of Medicine, etc. New York and London: G. P. Putnam's Sons.

This is an excellent monograph on the subject of "Imbalance of the Ocular Muscles," and should be read by every physician who has to correct errors of refraction or attempt to relieve muscular asthenopia. It is quite evident that Dr. Valk has given deep thought to the subject, and his exposition is deserving of the careful consideration of every ophthalmologist. Even those who differ with him, either in premises or conclusions, will be well repaid for a careful review of the case histories related and the deductions made therefrom.

The work bears the impress of an impartial weighing of accumulated evidence and of the author's originality, and presents several strikingly interesting propositions. We can only briefly refer to them here. In the first place, his statement that the "position of rest" for the eyes is "with the visual lines directed forward toward the horizon to a point slightly below it and slightly convergent" is at variance with the reigning authorities, but is well sustained by the accompanying argument. Then, we have been accustomed to consider exophoria, or a tendency of the eyes to diverge, to be generally the result of an existing myopia, and it seems true that this is the condition of imbalance most frequently found associated with myopia, but Valk shows, and I think for the first time, that if the question be viewed from the opposite standpoint it will be found that three-fourths of all the cases of exophoria are hypermetropic, with or without astigmatism. These two points have an important bearing upon and lead up to what is the strongest feature of the book—a consideration of the etiology of squint. Donders' theory of the deviation being dependent upon the state of refraction of the eye and the "innervation theory" are swept aside, and the hypothesis is presented that in all cases there exists an anomalous condition in the relative strength of the muscles, so that when the fusion power or guiding sensation is lost, from any cause, the eye turns in the direction of the more powerful muscle. To my mind the author's reasoning seems logical and perfectly satisfactory.

The space devoted to the treatment of these muscular anomalies might well have been enlarged upon, especially that part relating to surgery, but what advice appears is certainly written in a spirit of praiseworthy conservatism. Naturally there are a few points in the book which one might criticise, but they are really of minor importance.

Upon one feature I wish to particularly congratulate the author. As I read the book I felt personally grateful to Dr. Valk for the respect shown a pioneer worker in this field. Many writers are too prone to overlook the serious difficulties encountered and mastered by the early investigators of any subject and to magnify their trivial mistakes while minifying the great blessings and opportunities they have conferred upon us. No man in the world has done more to put the study of the ocular muscles upon a scientific basis than has Dr. George T. Stevens, and it is high time the profession exhibited the proper appreciation of his labors. Dr. Valk's showing of the value of the several instruments of precision invented by Stevens should do much towards securing for the latter's investigations the reward they so richly merit.

H. O. R.

PRACTICAL ELECTRO-THERAPEUTICS. By Franklin B. Gottschalk, M.D., Professor of Diseases of Children at Jenner Medical College; Attending Physician German-American Hospital; Assistant to Chair of General Medicine, Chicago Polyclinic; Member of American Medical Association, Chicago Medical Society, etc.

This book aims to give a practical working knowledge of the use of electricity in the treatment of disease. Vibratory stimulation and light (blue and Finsen light, electric-light bath, etc.) are considered in addition to electricity. The theoretical discussions of electricity are very brief and, unfortunately, inaccurate.

It is difficult to join in the author's sanguine expectations as to the results of his treatment. He advances rather remarkable theories of disease and of the rationale of its relief, in which it is even more difficult to accord.

The book is profusely illustrated with commercial forms of apparatus and methods of application and treatment. These will be found useful and instructive.

Treatment is considered to the almost complete exclusion of theory, and the practical points in the use and application of electricity (with which the author is evidently familiar) are of considerable value.

P.

MARYLAND MEDICAL JOURNAL.

JOHN S. FULTON, M.D., *Editor.*

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BALTIMORE, DECEMBER, 1904

AN OSLER DEMONSTRATION.

A PROJECT is rapidly taking shape in Maryland to signalize the removal of Dr. William Osler from America by a great demonstration of esteem. It is a source of pride to us in Maryland that the leaders of medicine in many parts of the country have inquired what we propose to do in acknowledgment of our good fortune in having so long enjoyed the fellowship and leadership of Osler. We are not yet ready to reply to this inquiry more definitely than by saying that, out of the cross-purposes of our pride and our regret, we shall let loose some sort of parting salvo that will make him everlastingly mindful of Maryland and keep Maryland in everlasting remembrance of Osler. He has communicated to us the master-word in medicine, and its fruits are manifest among us in scientific righteousness and truth. This he will leave with us, being himself none the poorer. We shall testify to the best of our ability that we know and like Osler better than he is known or liked elsewhere. We shall make him very uncomfortable.

HOW THE CONFIDENCES OF WOMEN ARE LAUGHED AT.

UNDER this caption the *Ladies' Home Journal* for November prints the testimony of an eye-witness concerning the business methods of "one of the largest patent-medicine concerns in the country." Mr. Bok vouches for the reliability and competency of the witness, who held a responsible position with the concern in question long enough to become familiar with its dirty details. The head of the business is a "Great Doctor" whose name and features are emblazoned on every landscape, and who offers through every newspaper his personal advice to all sick persons, especially to women and girls. Women especially are the quarry marked. They are so easily gullible. Every show is made of safeguarding confidential communications. The "Great Doctor's" personal advice is forwarded in envelopes having no device or mark upon the outside to indicate the source of the correspondence. Hundreds of letters come daily, addressed to the "Great Doctor," but not one of them falls under his gentle eye. He tours in his auto or kills time and distance on his yacht. The confidential letters all pass under a dozen pairs of eyes, and before they are filed they receive each a penciled number indicating which one of 50 or 60 ready-made letters shall be sent in response. These printed letters are done in imitation of typewriting, and the medical skill of the establishment has nothing to offer outside the range of these 50 or 60 forms.

Ordinarily the work of the clerks is dull enough, for the miseries of unknown people are, as a rule, absolutely uninteresting to those who work at this wretched business. But now and then some ignorant person sends a funny story or some bewildered woman makes a shameful revelation. These make the "rich" episodes in the stupid routine of the "Great Doctor's" helpful gang. Clerks put their heads together over these letters and spend unnecessary time over these "spicy" parts of the "Great Doctor's" confidential correspondence. Of course, a majority of the letters bring in money, and a certain proportion of the patients keep up their letters and remittances for a long time.

There are ingenious devices for prolonging treatment and for getting extra fees, and it is even possible to make a penny or two more after the victim can be made to yield no more. There is a ready market among advertising concerns for names and addresses, so that the address lists accumulated by the "Great Doctor" can be sold for three or four cents a name. Worse yet, the names and addresses are often not copied, but the letters themselves are sold. The story of the sovereign remedies, costing four cents and selling for a dollar, and the story of the testimonials paid for in cold cash are also told by this witness.

HAS THIS DOCTOR BEEN CORRECTLY REPORTED?

According to newspaper accounts of the hearing given by Governor Warfield to the petitioners for the pardon of George C. Worthington, convicted and serving sentence for causing a death by criminal abortion, a respectable physician made a remarkable argument in favor of executive clemency. He is said to have plead that the act which involved Worthington in the clutches of the law was perhaps indiscreet, but that, in considering the just measure of his punishment, some account should be taken of the large number of women whom Worthington shielded from shame and disgrace.

One way of applying this consideration to the case of Worthington would be to say that the crime which led to his conviction was but one in a long record of similar crimes, collectively meriting a penalty X times more severe than that actually incurred. This is the logical application of the argument, but the gentlemen from Howard county appeared in the interest of Worthington, and if he used the language ascribed to him by the reporters he meant to say that Worthington's very numerous feticides, not accounted for in court, were so beneficent as to counterbalance the evil case in which the court found him.

The sense of the medical profession is exceedingly definite upon the right of a child conceived to be born alive. If the fulfillment of her pregnancy involves extraordinary hazard of the mother's life, the rights of the child are subordinate, though never negligible, and the questions arising in such circumstances are never easy enough to be settled without counsel. Than the physician no one is more deeply stirred to pity by the appeal of shame—open, scarlet shame—and none more steadfast than he against the appalling judgment of society upon woman's frailty. But his skill to terminate a pregnancy is not secured by the appeal of shame, and never, where two or three physicians are gathered together, is the practice of abortion justified or condoned by so much of a nod or a whisper.

So vital is this particular item of professional ethics that a physician having the hardihood to maintain such views as the gentleman from Howard county is said to have expressed would not be admitted to any medical society of this or any other civilized country.

We hope that our professional brother was incorrectly reported, or, if correctly reported, that he was betrayed by incoercible circumstances. In any event the medical profession, charged, as it is above all other avocations, with moral responsibilities of this particular kind, must make it clear that such views are flagrantly offensive to the common sense of the profession.

SOME ORGANISMS ANTAGONISTIC TO TYPHOID BACILLUS.

In the history of typhoid bacillus outside the human body much of the history of the rising generation is involved. Mediate infection so far preponderates in the spread of typhoid that the disease may be considered the long-range champion among the foes of human health. The typhoid organism is one of the subtlest and most elusive of known bacteria. In its epidemiologic relations we are more surprised by whom it spares than by whom it attacks. Its relations to soil and water have been most persistently studied, and gradually we are getting hold of the details of its extracorporeal existence.

It has long been known that the typhoid bacillus is at a great disadvantage in competition with many other organisms. Indeed, that fact is very familiar and most embarrassing in the laboratory. A recent paper by William Dodge Frost in the *Journal of Infectious Diseases* shows the particulars of antibiotic relations between typhoid bacillus and certain saprophytic organisms. Some of the conclusions resulting from this study are:

1. A marked antagonism is exerted by mixed cultures of soil and water bacteria upon B. typhosus when the former are grown in broth and a collodion sac containing typhoid bacillus is immersed therein.
2. This antagonism results in actually killing off the typhoid germs. In some cases the killing off amounts to extinction.
3. The antagonistic substances probably do not exist preformed in the soil or water, but are developed by growth of the bacteria in the presence of typhoid bacillus.
4. These antagonistic organisms are widely distributed in soil and water.
5. An antagonism has been definitely associated with B. vulgatus, B vulgaris, Ps. fluorescens, and Ps. putida.
6. Whenever the environment is such that a good growth of the organisms occurs, antagonistic substances are always produced.
7. The energy of the antagonistic action depends on temperature. At 38° C. the action is very pronounced. At 10°-12° C. the typhoid germ may grow in the by-products of the other germs.
8. The antagonistic substances withstand a temperature of 120° C. for at least 10 minutes.
9. The antagonistic action is equally apparent in at three different strains of typhoid bacillus.

Medical Items.

The late Dr. J. Fussell Martenet is to be commemorated by a stained-glass window in Apold M. E. Church, Baltimore.

Dr. A. G. Pohlman, instructor in anatomy at Johns Hopkins Medical School, has resigned to become assistant professor of anatomy in the University of Indiana.

Dr. Corbin F. Hargis of Pocomoke City died on November 20 after an illness lasting more than three years. Dr. Hargis graduated at the University of Maryland in 1890.

The McCormick Memorial Institute for Infectious Diseases has been further enriched by a gift of $100,000 from Mr. Otto Young. This sum is contributed to the endowment or building fund.

The study of yellow fever continues to involve the sacrifice of life. Dr. Zaldo Gocchi, working as an employe of the Italian government on yellow fever, recently contracted the disease and died at Merida, Mexico.

Miss Cecilia McGraw, who was injured in a street-car accident in Philadelphia in 1902, has been awarded damages against the Philadelphia Rapid Transit Co. in the amount of $17,500. She has been unable to walk since the accident.

Dr. Henry R. Carter of the U. S. P. H. and M. H. Service, chief quarantine officer of the Isthmus Canal Commission, paid a hurried visit to Baltimore on November 17, returning on the next day, with his wife and children, for Panama.

Dr. E. B. Elder of Macon, Ga., proved himself the right man in the right place recently when a lynching party went after a wounded murderer in the Macon Hospital. Dr. Elder confronted the mob with his revolver and refused them admission. The lynchers withdrew.

Great rioting occurred in Rio Janeiro on November 13, the disturbances having been caused, it is said, by compulsory vaccination. It is believed, however, that the antivaccination cry was merely a pretext of political revolutionists. Seven persons were killed and about 30 others were wounded. The city was put under martial law for 30 days.

A project is on foot to obtain an act of Congress incorporating the American Medical Association. Many State societies have made petitions to their representatives to favor this act. The business interests of the association are at the bottom of the movement. Many of the State societies affiliated with the American Medical Association are not incorporated.

Dr. Charles H. Cockey died of pneumonia at his home, 211 North Gilmor street, Baltimore, on November 19, aged 60 years. Dr. Cockey was a graduate of the University of Maryland, but early abandoned the practice of medicine. He was for 27 years principal of public school No. 18. He was a man of extraordinary height, of distinguished appearance, and an accomplished musician.

In Michigan, too, certain doctors are having troubles of their own. The regents of the University of Michigan have ruled that the members of the medical faculty must furnish gratuitous services to all who apply for treatment, rich and poor alike. The Wayne County Medical Society has protested strongly against this ruling. Does the School of Mines up in the northern peninsula occupy such amiable relations with the copper kings?

The Pan-American Medical Congress at Panama and the meeting of the American Public Health Association in Havana will be the chief events of medical interest in January, 1905. The Di Giorgia Steamship Co. of Baltimore will take a party of about 50 from Baltimore to Panama, returning to Havana in time for the meeting of the American Public Health Association, and stopping for a day at Jamaica on the return from Havana to Baltimore.

Yellow fever is said to have appeared in Cuba after an absence of nearly five years. Dr. Carlos Finlay, the chief sanitary officer of Havana, denies the report, but the statements are very definite that two cases have occurred recently in Havana and two in Punta de Sol, across the bay from Santiago. It is said that the Cuban government has gradually abandoned the sanitary measures which were instituted under American rule and which were kept up by President Palma for about a year of Cuban independence.

Dr. Seth S. Ullrich, surgeon-major in the Fourth Regiment, M. N. G., died suddenly of angina pectoris at his home, 11 North Carey street, Baltimore, on November 20. Dr. Ullrich graduated at Jefferson Medical College, Philadelphia, in 1881, and came to Baltimore in 1887. He was associate professor of surgery in Baltimore Medical College and a member of the local board of United States pension examiners. During the Spanish-American War he served as assistant surgeon to the First Maryland Regiment. He was 46 years of age.

THE trustees of the National Association for the Study and Prevention of Tuberculosis met on November 16 at the United Charities Building in New York. The first annual meeting of the association will be held in Washington on the third Tuesday of May, 1905, and will continue for two days. There will be two large general meetings, and the remainder of the work will be done in the three sections—sociological, pathological and bacteriological, and clinical. The censorship of papers offered will be very strict, and only those of undoubted merit will be accepted.

DR. CHARLES H. POTTER died suddenly on November 9 at his apartments on Chase street, Baltimore. He had been in failing health for about a year. Dr. Potter was a graduate of the Baltimore Medical College, and for a time was pathologist to the medical school and hospital, but in recent years most of his time had been devoted to microphotography. He had in his early life extensive experience as an outdoor photographer, and after being trained in pathology he easily became an expert in microphotography. His services were in great demand, and his illustrations are found in many important works. Dr. Potter left $20.000 as a reversionary legacy for the relief of disabled clergy of the Presbyterian Church.

THE work of the Pneumonia Commission of New York city has been halted by the Municipal Civil-Service Commission, which has ruled that the experts who were chosen to conduct necessary investigations must first pass the civil-service examination. The Pneumonia Commission includes Drs. Welch, Prudden, Biggs, Holt, Musser, Janeway, and Osler. They proposed to study some 20,000 case of pneumonia this winter, and as New York in all her greatness cannot furnish so much material, the Pneumonia Commission selected several well-known investigators to utilize the experience of some 30 large hospitals in other cities besides New York. These special investigators are the men who must make marks in civil-service examinations. Fancy Theobald Smith trying to convince a civil-service commission of his fitness to study pneumonia! Fancy a civil-service commission rating the examination papers of Theobald Smith!

SUBWAY air has excited much popular discussion in New York. Many self-actuated analysts reported that the air in some parts of the subway contained as little as 11 per cent. of oxygen. Many complained that the subway air is hot and damp. Others suffered feelings of impending suffocation, anxiety, atrocious headache, mental confusion, ringing in the ears, and so on. Others regarded the subway as a bacterial culture tube of infinite capacity, a veritable inferno of plagues. Many are bewildered by the advertising placards at the stations, and cannot tell when they reach their destinations Professor Chandler of Columbia has been authorized by Health Commissioner Darlington to test the subway air. Fifty-three samples examined by Professor Chandler gave an average oxygen percentage of 20.55—as good as street air. The advertising placards are real, however. A man intending to ride to 14th street left the train at the first station, which was marked "Just Wilson."

ON November 17 the United Charities Hospital of Cambridge, Md., was formally opened. The attendance from other parts of the State was very large. Some 350 visitors, including a large number of physicians, were carried on the steamer Cambridge as guests of the hospital management. The exercises were held in the open air on the hospital grounds, ample provisions being made for comfortably seating the great crowd. The weather was as fine as could be desired. Addresses were made by Governor Warfield, Judge Henry Lloyd, Dr. Howard A. Kelly, and Dr. Brice W. Goldsborough. The keys of the hospital were presented by the architect, Mr. Archer of Baltimore. The hospital is most beautifully situated on the water-front in East Cambridge, overlooking the magnificent expanse of the Choptank river. This view is hardly excelled even in the varied scenery of Maryland. The building is a very fine example of modern hospital construction. Simplicity of design and conformity to latter-day requirements are its conspicuous merits. The hospital has cost so far about $70.000, and $5000 more will be expended on its furniture. The name United Charities Hospital was suggested by the late Mr. John E. Hurst of Baltimore, a native of Dorchester and the chief contributor to the building fund. Mr. Hurst contributed $30,000. The building is of brick, in colonial style. There are three stories and a basement. The front looks over the water. It is 136 feet long, the central portion being 51 feet wide and the wings 36 feet wide. There are 16 private rooms and a total capacity of about 60 beds. The operating-room is on the third floor, and, with its two accessory rooms, supplies ideal conditions for good surgical work.